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LECTURE III.[1]

IN the preceding lecture I dealt with some of the forms of response to nocuous stimuli from a physiological point of view. We cannot, however, content ourselves with purely physiological observations. Our patients come to us complaining of certain definite subjective symptoms and our object is to detect the defects of bodily mechanism of which they are the signs. It therefore becomes a matter of urgent importance to determine so far as we can the relation between bodily responses to stimuli and affective states. It is true that we have learnt physiologically to observe only an infinitesimal part of the bodily changes that are associated with affective states; but that small part is, as we have seen, susceptible of quantitative as well as qualitative observation. As a first step we must consider briefly what we mean by an affective state and what relation it bears to sensation.

SENSATION AND AFFECTIVE STATES.

Sensation is defined as an elementary mental process which is possessed of the attributes of quality, intensity, clearness, and duration. Affection is similarly an elementary mental process, but though possessed of the attributes of quality, intensity, and duration it has been denied that it possesses the attribute of clearness. It is said to be impossible to attend to an affection. If we attempt to do so the quality of pleasantness or unpleasantness disappears and we find ourselves contemplating some obtrusive sensation that we have no desire to observe. If we want to get pleasure from a concert or a picture we must attend to what we hear and what we see. As soon as we try to attend to the pleasure itself the pleasure is gone. (Titchener.) Herein lies the pith of the argument for dissociating affection or feeling from sensation. The subsidiary argument that the opposition of the qualities of affective pleasantness and unpleasantness is not paralleled by any of the facts of sensation appears to me to be untrue, or at best unprovable, because we know no more about pure sensation than we do about pure feeling or affection.

It is at this point that objective psychology comes to the rescue. The reason for the apparent difference between affection and sensation has been made clear by neurological investigations, especially by the work of Head and Holmes. Two systems of afferent function exist—the one system reacts to stimuli of a nocuous nature, and the effector organs which manifest its activity are either organs not under the power of conscious effort or else certain combinations of reflexes which cannot be voluntarily activated. The great terminal ganglions for this mechanism are in the thalamus. This system is phylogenetically older than the cortical system. It originates the defensive reflexes by which the body reacts as a whole to nocuous stimuli, whether by glandular, visceral, vascular, or muscular pattern reflexes. There is another system of nervous mechanisms by which appropriately adjusted reflex patterns are combined in response to stimuli not in themselves possessing either nocuous or benign characteristics, and the terminal coördinating centre of this mechanism is in the cortex. Its function is, to borrow the language of Head and Holmes, discriminatory, and this discriminatory adjustment of certain reflex mechanisms to various stimuli is correlated with consciousness.

The two systems are not, however, independent. When the activity of the cortical processes is impeded, by inhibition arising from either external or internal stimuli, an activation of the thalamic system may occur; in other words, the resources of the body as a whole are mobilised to overcome the resistance. Conversely changes of the activity of the thalamic affector organs when they reach a certain degree of intensity stimulate the cortical receptors and we become aware of a change in the common sensation of the body. The consciousness of such a disturbance constitutes what we term an affective state. This reciprocity between the effector organs of the thalamic system and the cortical discriminatory system was already clearly appreciated by Hobbes—"adeo inter se motus cordis et cerebri sunt reciproci." The function of the cerebral cortex has been said to be discriminatory, a certain stimulus or group of stimuli being integrated with a specific reflex pattern activity, but when stimuli arising from the activity of the thalamic system reach the cortex they represent changes taking place in every part of the body. No one elementary group of sensations will be prepotent; we are only aware of a diffuse sensory disturbance. Such appears to be the objective explanation of the origin of the attempt made by psychologists to differentiate between feeling and sensation. When the thalamic activity is of great intensity in response to a maximal stimulus, such as intense fear, certain of its elements may be so intense that they dwarf the remainder and are attended to as an ordinary sensation when their afferent impulses reach the cortex. Thus an absolutely definite sensation of nausea is experienced by some men when under fire, others complain of a burning sensation in the throat, others of palpitation; and it is a peculiarity of the predominant sensations that they may so dwarf those arising from other forms of organic resonance that a man who is not conscious of any great degree of fear simply becomes aware of a sensation of nausea when under fire for the first time. It may not be till after he has gone through the experience on subsequent occasions that he recognises a connexion between his nausea and exposure to danger.

It is in the preponderance of some one such type of reaction, due either to innate or acquired anatomical abnormalities, that we find the explanation of so many of the visceral types of neuroses. In many cases the actual movement of the effector organ rather than its sensory concomitant holds the attention, as in the case of the well-known occurrence of vomiting, micturition, or defæcation as a response to nocuous stimuli. In the last lecture we have seen that the organic response to nocuous stimuli is manifested as activity, and the response to benign stimuli as quiescence, and we are therefore justified in associating activity of the thalamic system with unpleasantness and quiescence with pleasantness. So far as it has been necessary to speak of these sensory concomitants of the bodily reactions I have spoken of them as states of affection or of feeling. From the physiological standpoint I can see no difference between an affective state and an emotion, and I am perfectly willing to use either term indifferently. From what can be gathered from the writings of psychologists it would appear that when certain sensory elements of an affective state sufficiently predominate so as to direct the attention overwhelmingly to their presentation the state is said to be one of emotion; the difference is therefore one of quantity and not quality. I do not propose to enter into any attempt to differentiate the various types of emotions or affective states. Much of the psychological literature on this subject is characterised by that peculiar naivete with which the scientific specialist too frequently tends to regard life. Our preceding short review of some of the objective changes verifiable as bodily responses to affective

[1] Lectures I. and II. appeared in THE LANCET of July 16th and 30th respectively. The final lecture will appear in a coming issue.

stimuli is sufficient to substantiate the acceptance of the popular psychology of "mixed feelings." We have seen that movements common to other states of activity may occur as concomitants of different affective states.

PROBLEM OF ORIGIN OF AFFECTIVE STATES.

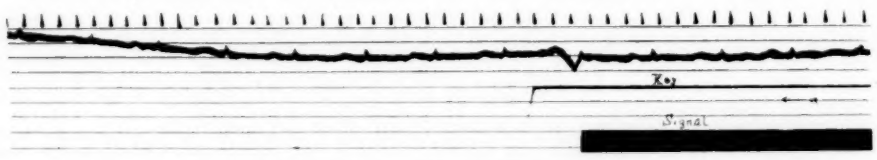
However much we may wish to confine our study of the neuroses to a purely objective basis we are unable to evade the question as to whether an affective state is to be regarded as conditioned by the physiological changes of bodily activity, or whether such changes occur as the organic resonance to a preceding affective state. Our whole system of the interpretation of the emotional aspects of the neuroses must be influenced by our answer to this problem. Ancient writers answered it in no uncertain fashion:

> "Cor ardet, pulmo loquitur, fel commovet iras,
> Splen ridere facit, cogit amare jecur."

Aristotle and his school of course recognised no other bodily mechanism for mental processes than that of the thoracic viscera. The Stoics, for the most part, rejected the brain as the seat of mind, and Zeno, Chrysippes, Diogenes, and Apollidorus were unanimous in proclaiming the heart to be the seat of the emotions. It would be too lengthy a task to follow the causal attribution of the affections to visceral changes throughout the Middle Ages. In recent times it has been revived in the James-Lange theory of emotion. I cannot do better than give the theory as propounded in James's original words: "Common sense says we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by rivals, are angry and strike. The hypothesis here to be defended says that this order of sequence is incorrect: that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble because we are sorry, angry, or fearful, as the case may be." This view has apparently been held in different forms by Sergi, Richet, Ribot, Münsterberg, and others, and has provoked a storm of controversy.

I shall not attempt to follow the arguments based on introspective considerations, but will turn to those furnished by objective methods. Sherrington attempted a physiological solution of the problem by depriving a dog, so far as possible, of all afferent paths of somatic sensation. He transected the spinal cord in the cervical region and subsequently performed double vagotomy. In spite of the deprivation of organic sensation that was occasioned by these measures the animal showed unmistakable signs of emotion when angered or menaced. The experiment is, as Sherrington recognises, by no means conclusive; all that it entitles us to say is that for the dog in this condition emotional manifestations were confined to the head and neck area, and we have already adduced evidence that changes in muscle tonus are just as much one of the factors of the organic emotional response as visceral and vaso-motor changes. Ward has urged that James's theory is a flagrant ὕστερον πρότερον—a putting of the cart before the horse. Emotion is always the expression of feeling; and feeling, for the subject that feels, has always some objective ground. Emotion is never the reception of impressions, but is always the response to them. Let us see how far a purely objective inquiry as determined by observations of the bodily reactions will help us to settle the question. Fig. 1 is the record of a reaction to a nocuous stimulus, manifested by the galvanic reflex, of a motor voluntary reaction and of an involuntary motor reaction or start. About the last-named reaction—the start—I have little to say; its latent period is very short, about 0·08 of a second. It can be, as Sherrington has shown, elicited as a purely mesencephalic reaction to auditory stimuli in decerebrate animals, when its latent period is about 50 σ. In this case the stimulus was a fainter one, and the latent period is appreciably longer than that found by Sherrington in animals—and this is the rule for any type of start reflex as elicited in man; it is therefore by no means certain that it has the same bulbar origin as the reflex in decerebrate animals. It is not an invariable accompaniment of affective states determined by nocuous stimuli, and for our present purpose we may disregard it. The next event recorded on the photograph is the voluntary motor reaction: the subject was instructed to press a key as soon as he perceived a prick. The latent period is here a normal one of 0·2 second. The third event is the movement of the galvanometer fibre at the beginning of the galvanic reflex. The latent period of this reflex is here 2 seconds. If the galvanic reflex be taken to indicate one of the many bodily responses that go to make up the general state of bodily activity whose sensory equivalent is an affective state then this affective or emotional state is arrived at quite 1·8 seconds after the initial stimulus has been perceived and acted upon.

FIG. 1.



Galvanic reflex to prick stimulus. Record shows heart beats. Below is the record of the Deprez signal marked "key." Time above in fifths of a second.

It might be urged that the galvanic reflex is a response sui generis with a remarkably long latent period, and that the other responses take place more rapidly. The analogy between the galvanic reflex and the time relations of the "cat pad" phenomenon of Luchsinger might prima facie lead us to the same conclusion. The experiment of Luchsinger, it will be remembered, consisted in observing a secretory current from the pad of a cat's foot when the sciatic nerve was stimulated electrically and the latent time of this reaction, measured by Waller in the human subject, is about 2 seconds. The latent period of the plethysmographic response can be measured with a fair degree of accuracy, and in the previous lecture we have seen that its time relations are the same as those of the galvanic reflex. The latency of the alterations of pulse rhythm cannot obviously be determined accurately, but by collation of a large number of tracings I have never found it to be a shorter period than 2 seconds. We have seen reason to believe that the acceleration of the cardiac rhythm is due to removal of the inhibitory action of the vagus, and physiological experiments assign a latency of about 1 second to the vagal reflex.

The latent period of the respiratory changes is similarly incapable of accurate determination, but I have never found it to be less than 1 second. The muscular tonic response in the majority of my determinations had a latent period of about 2 seconds. I have no data as to the latent period of visceral and

glandular activity, but indirect evidence would point to their being at least equally long. Thus the objective evidence is unequivocal—the stimulus is perceived, differentiated, and acted upon a considerable time before the presentation of the sensory concomitants of the bodily reactions could be experienced as an affective state. In my own case introspection seems to confirm the objective data. Experiences in the line in France were perhaps a little too complex for analysis, but in the streets of London my absence of mind has frequently nearly involved me in a motor accident. In such cases after successfully avoiding the oncoming vehicle I have experienced some 2 seconds later the feeling that we used to call as children "going hot all over." Had the stimulus been less transitory and the motor pursued me instead of avoiding me the continued organic response would on the sensory side have amounted to what we know as a state of fear.

Possibility of Existence of an Objectless Affective State.

It is of great importance for the understanding of the nature of neuroses that we should determine whether a reversal of this normal sequence of events can take place; that is, can a pre-existing state of bodily activity, which is the physical aspect of an affective state, determine the orientation of cortical activity so that the state of emotion arises first, and then an object is assigned to it? It may be disputed whether an objectless affective state can exist, but there is ample evidence that the existence of the bodily concomitants of an affective state will facilitate the representation of some situation which will then be assigned as its object. Marañon injected a small dose of adrenalin into a sensitive patient, and obtained various subjective sensations which as a rule constitute the syndrome of terror. At times this was noted by the patient himself, who declared: "I feel as if I were afraid, but I am calm." When, however, he supplied an appropriate verbal stimulus by mentioning some source of anxiety to the patient, although such a stimulus would naturally have caused but little reaction under normal conditions, the patient would break down completely in a fit of emotion.

Hitherto I have not dealt with the influence that may be exercised on the response of the nervous system through the agency of the internal secretions.

Disturbance of Endocrine Secretions in Response to Nocuous Stimuli.

The classical experiments of Cannon seem to have demonstrated that states of excitement are accompanied by a hypersecretion of adrenalin, as evidenced both by direct serum tests for its presence and by the occurrence of glycosuria. His brilliant demonstration has been received with great enthusiasm and a far greater rôle has been assigned by the uncritical to the part played by the hormones in the activity of the nervous system than can be justified by observation. It is too readily forgotten that the effector organs of the vegetative nervous system respond to the internal secretions of the adrenals in precisely the same way as they would if acted upon by the vegetative system directly. It is therefore no proof that a reaction is due to the stimulation by an internal secretion, and not to the autogenous activity of the nervous system, to say that the reaction resembles that which is experimentally produced by the injection of the hormone. Swale Vincent has pointed out that there is no evidence whatsoever that adrenalin, for example, is a normal constituent of the blood; indeed, there is much cogent evidence against such an argument.

That under certain conditions of great excitement adrenalin may be present in the blood seems to be fairly well established from the work of Cannon, but were it secreted as a response to stimuli of a less intense and prolonged nature it could only be present in the blood in such minute amounts as to be incapable of initiating the bodily emotional responses. I have conducted a series of observations on my own blood taken before and after the experience of ten minutes' faradisation. In no case was I able to detect any hyperglycæmia as a reaction to the pain stimulus. It is obvious that the painful stimulus was inadequate inasmuch as it neither increased the blood sugar nor produced glycosuria, but the pain was certainly more severe than is likely to occur in the normal experience of healthy life, and it seems legitimate to assume that the ordinary nocuous stimuli of daily life are unlikely to affect the secretion of adrenalin. This criticism applies even more strongly to the internal secretions of the other endocrine organs as a direct response to nocuous stimuli. When we turn to the evidence in support of the direct influence of the internal secretions on the threshold excitability of the thalamic system, we are on surer ground. There is ample clinical evidence of the state of hyperexcitability of patients suffering from hyperthyroidism to stimuli adequate to arouse an affective response. Experimental observations show that the hormone of the thyroid has a marked influence on bodily activity. This hormone has been isolated and identified by Kendal as an indoxyl

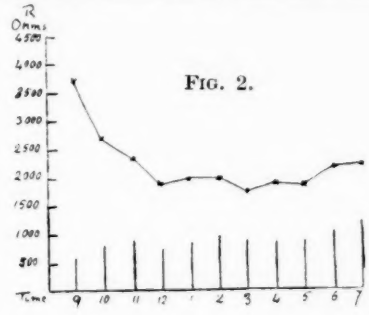


FIG. 2.

Above, curve of diurnal resistance as altered by ingestion of thyroid extract—compare Fig. 8, Lecture II. Below, responses × 2 to maximal stimulus (pistol shot).

iodine compound and found by him to raise the rate of basal metabolism 2 per cent. in a man weighing 70 kilos. when administered in a dose of 5 mg.

I have in a previous lecture dealt with the diurnal variation of the bodily resistance described by Waller, and I showed that there was evidence of a rough correspondence between the magnitude of the galvanic response and the diurnal resistance variation. In order to test the action of ingested thyroid gland on the galvanic response I again made use of this diurnal variation. By taking large doses of thyroid in the early morning I was able both to diminish the mean value of the skin resistance and to mask its diurnal variation. At the same time the galvanic response to uniform sound stimuli of moderate intensity was markedly increased. Fig. 2 may be compared with the record of the diurnal variation of resistance and the magnitude of the galvanic response represented by Fig. 8, in the second lecture. Each diagram represents the mean observations of three successive days. Subjectively, whilst under the influence of thyroid in large doses, I was aware of a marked degree of irritability which lasted throughout the time of the thyroid ingestion experiments, but which appeared to be accompanied by a rather increased power of doing work. I give these subjective observations for what they are worth. That a diminished skin resistance occurs in cases of exophthalmic goitre was shown long ago by Vigouroux. The action of adrenalin in producing effective states has already been considered; but in the absence of any proof of its normal presence in the blood stream we have no right to consider that the normal activity of the affective thalamic mechanism is influenced thereby. There is some direct evidence that the internal secretions of the gonads facilitates the specific affective response to sexual stimuli as shown by the results obtained with implantation of testicular grafts in man and animals suffering from loss of sexual desire. Although there is every reason to believe that the internal secretions of other

glands have a direct influence on the affective responses it is difficult in the present state of our knowledge to bring forward any incontrovertible proofs of this hypothesis. It must never be forgotten that a glandular structure in the normal body is not inert so far as the furnishing of afferent impulses to the central nervous system is concerned.

It may well be that these afferent impulses and not the internal secretions evoked by their activity are the determining influences of the glands on any particular mechanism of response. I was able to obtain records of the secretion of saliva from my own parotid gland by applying a small catheter tube maintained in position by a suction ring over the orifice of the duct. This procedure has been adopted by other observers for the recording of conditioned reflexes produced by the sight of food; I found that nocuous stimuli, if of sufficient intensity, tended to produce inhibition of the saliva flow. The fall of the drops was recorded by allowing them to tilt a tipover key that closed a Desprez signal circuit and thereby recorded on a smoked drum. There is not wanting evidence of the disturbances of the gastric, intestinal, and renal secretions as a response to nocuous stimuli. We have so far seen that the mechanism of all forms of cerebral activity is capable of being recorded in terms of muscular and glandular activity; before attempting to transfer this knowledge to the investigation of neuroses we must consider the constitution of some of the more complicated nervous mechanisms in their barest outlines. In the last lecture I showed a slide (Fig. 7) illustrating a conditioned reflex; you may perhaps remember that the subject was taught by means of a painful stimulus to perform a certain movement and that we noted that when the stimulus was intermitted, whilst the audible sign that had hitherto accompanied it was made, the subject responded precisely as if he had perceived the stimulus. We also noted that the signs of an affective response, as evidenced by the galvanometer, were present when the click of the electric key occurred in the absence of the stimulus. In the language of popular psychology the subject had formed a habit, or in that of physiology a pattern reflex had been conditioned. Now supposing the stimulus had been repeated a requisite number of times, the subject would, at any rate for the first few occasions on which the click of the key was alone given, have found himself utterly unable to control the movement of pressing the signal key. But this movement was in the first instance one that had been acquired as a result of the activity of the discriminatory mechanism of the cortex. It has now ceased to be discriminatory and become independent of the first process of nice adjustment of a specific mechanism to a specific response by the inhibition and coördination of other forms of cortical activity. There is, however, no evidence that the response has ceased to be controlled by the same cortical mechanism which started it. I found in this particular instance that after the first few times the voluntary muscular reaction settled down to a constant latent period of 0·18 second and that later when the conditioned reflex was elicited by a click alone the latent period remained unchanged. Owing to the slow rate at which these particular records were taken the latent periods could not be read closer than to 0·02 second, but the accuracy is sufficient to justify our assumption that the reaction continued to be performed by the same cortical mechanism that had been responsible for its initial manifestation.

Now this statement embodies a very important fact of which the psychotherapist endeavours to make full use. It means that when the reaction had become part of a conditioned reflex and had ceased to be the centre of conflicts between various alternative reflex paths, which conflicts we generally associate with conscious perception, the conditioned reflex still made use of the same cortical mechanism. That is, it still had a direct nexus with all those processes with which it had been originally connected. Therefore by the use of appropriate methods of observation it should be possible to determine what the original associations were when they are no longer objects for the subject's own consciousness.

CONDITIONED REFLEXES IN DAILY LIFE.

Now the greater part of our daily conduct is made up of such conditioned reflexes or habits, and the more effectively they have been established by constant repetition the more difficult it is to interrupt the reflex pattern by some fresh stimulus. We defined one of the attributes of a nocuous stimulus as a tendency to interfere with and impede the normal tendencies of vital activity. There is no more fixed or powerful activity than that of a well-established habit mechanism. A verbal or physical stimulus that impedes the activity of a habit reflex pattern will therefore act as an intense nocuous stimulus, and through the inevitable thalamic mobilisation of the bodily activities to resist such interruptions an intense affective state will be the sensory result. Not only stimuli from outside may tend to impede the activity of the habit mechanisms. Attempts on the part of the subject to interfere with them will equally evoke the generalised bodily response with the corresponding unpleasant feelings. Lastly, the constant occurrence of these reactions, whenever the habit mechanism is interfered with, may in itself condition a new reflex pattern—an active opposition to all attempts to cause the feeling of discomfort by interfering with the primary habit. Such, I believe, is a restatement in the language of objective psychology of the rather clumsy symbolism which the psycho-analyst makes use of; such terms as "the censor" would appear to be unnecessary in this connexion. There is another type of pattern reflex even more potent and more dissociated from the discriminatory mechanism of the cerebral cortex. Unlike the conditioned reflex it has never arisen in the life of the individual from a discriminatory response to a stimulus. This mechanism is an inherited one, and is unchained by some one specific type of stimulus and by no other. Such innate reflexes of a specific type are in greater or less degree common to all the individuals of the same species; these inherited reflex patterns are known as instincts.

INSTINCT REFLEXES.

Now by definition an instinct is an inherited pattern reflex. It is evoked by a specific stimulus and in response to this stimulus the pattern is unfolded. The end-result of the reflex is implicitly determined by the nature of its innate mechanism, and it is a mere matter of chance whether this end-result is ever presented to the subject who owns the reflex. Though by observation we may sometimes learn what the end-result really is, it by no means follows that we shall necessarily do so, and in the case of the lower animals—as when an insect, after laying its eggs, prepares food for larvæ that it will never live to see—it is quite certain that it can never know the end-result towards which the instinct reflex is orientated. Now it is of great importance to the understanding and treatment of the neuroses that we should know whether an instinct reflex has any such relation with other discriminatory mechanisms as may allow us by association methods to determine its true orientation. We may recognise that a certain line of conduct is not substantially in harmony with the environment, that attempts to impede it cause great emotional disturbance, that its origin is obscure and its end-result opposed to the interests of the patient. It is, however, only by tracing some affinity between its mechanism and the nervous system as a whole that we can hope to understand or influence it. In the case of a habit or conditioned reflex this is relatively easy. It arose as a discriminatory response to a certain stimulus—that is, it was once an object of experience and may again be recalled by appropriate methods. But if the instinct be an inherited mechanism, how can its origin be with any certainty deduced from its relation to other mechanisms accessible to consciousness? The problem is a fundamental one, and has presented itself in many forms.

To the Atomists, to Heraclitus, and to the Pythagoreans (who never drew a distinction between animal and human intelligence) the problem was never presented, nor do we see any trace of it in the anthropomorphic animal psychology of Plutarch. The conception of a divergence between abstract thought and animal life is implicit in Plato, and the distinction became more definite in the writings of Aristotle and the Stoics. In scholastic thought we find instinct formally recognised as comprehending the totality of animal behaviour and the baser part of human conduct, whilst in Neo-Platonism there is a reversion to the standpoint of the Epicureans. With the wane of scholastic thought the tendency to the anthropomorphic view of animal behaviour has persisted till the present day. Darwin formulated our present knowledge of instinctive behaviour and gave full recognition to its recurrence in man and its evolutionary significance.

The problem as to the relation of instinct and intelligence now becomes a biological one. Those who hold the Neo-Lamarckian doctrine as to the hereditary of acquired characters may consider that instinct is nothing else than a hereditary conditioned reflex—that somewhere in the past a discriminatory action became a conditioned reflex, and by the aid of natural selection such a conditioned reflex has been handed down as an innate part of the nervous mechanism. If an instinct in its earliest stages originated as an act of conscious discrimination its later hereditary form will still show some affinity to the conscious mechanism that first started it, and we might hope that by learning something of its cortical connexions we would arrive at its origin. On the other hand, if an instinct be regarded as a variation preserved by process of natural selection, it is clear that to seek its early cerebral connexion is futile, and if we disbelieve in the heredity of acquired characters the instinct reflex pattern must be unfolded de novo in each generation, and the associations that it may possess will only be such as may have been acquired during the life of the individual. Men of such different schools of thought as Ziegler, Haeckel, Spencer, Wundt, Semon, Ward, MacDougall, and Preyer, adopt the Lamarckian standpoint; Driesch and notably Bergson represent a return to the scholastic view of instinct. For Bergson instinctive behaviour represents a form of activity to which there can never be a psychical correlation in the terms of human practical intelligence. Human intelligence is so developed and so limited as to enable us to adopt mechanical aids to life, and therefore postulates at the beginning of any action a more or less clearly defined conception of what its end is to be. Instinctive behaviour knows nothing of ends; it can only reply to introspection in the words of Luther, "Ich kann nicht anders."

I venture to think that all speculations about the psychical aspects of instinctive behaviour founded on animal observation are of very doubtful value. The supreme act of faith is the attribution of consciousness to our fellow beings, for knowledge of consciousness is never immediately given; but to proceed to speculate about the psychical correlations of instinctive behaviour in insects can hardly be helpful to objective psychology. We must turn to human instincts, and we must obviously select for study of instinctive behaviour an act performed for the first time and from which mimicry and verbal suggestion are excluded.

EXPRESSION OF THE ANIMAL NEST-MAKING INSTINCT IN HUMAN BEINGS.

Some years ago I observed what has always seemed to me to be a singularly interesting and beautiful instance of instinctive behaviour that fulfils these postulates. If it has been already noted by others I must apologise for presenting it under the guise of a new observation. A primapara about two days before the birth of her child worked very hard at tidying not only all the drawers of her bedroom and boudoir but also her husband's desk. Asked why she did this she said that as she was going to be ill for a long time she wished to have all her own and her husband's things in perfect order. The answer seemed to me to be somewhat inadequate, since as a rule the husband's desk was never interfered with. Some time later the father of several children remarked to me that he always knew when a birth was due, since for a couple of days before it his wife in an excess of energy would tidy every drawer she could find including all his private papers. When I asked him why she did so he said that she gave him the same explanation as I had received in the first case. Now I knew this lady sufficiently well to feel sure that on the occasion of her long absences at her country house, where she spent many months every year, the last thing that would occur to her would be to prepare for her absence by such a minute ransacking of drawers that are as a rule outside her province. I then asked a midwife if this procedure was a usual precursor of childbirth. She said that she had observed it in quite the majority of her cases, and inasmuch as her practice lay among some of the wealthiest people of the country in whose houses such duties as the arrangement of drawers and cupboards are seldom performed by the mistress the phenomenon was all the more striking. Later on when observing the behaviour of a doe rabbit in a breeding hutch I noted that for three or four days before delivery the doe spent her time in a state of frantic activity collecting bits of hay, tossing them up to unravel them, and finally carrying them to the dark compartment at the end of the cage. She was making a warm nest for the expected young. When we find that this nest-making behaviour is universal among the higher apes I think that we are entitled to assume that the drawer-cleaning, sorting, and tidying are the expressions of the animal nest-making instinct.

We have here an instinct untainted by any possibility of mimicry, and since its existence is apparently unknown, free from any complication due to suggestion. The purpose of the reflex instinct mechanism is unknown to the expectant mother, and when her attention is directed to it, and she is asked what she is doing, she casts about for an explanation and evolves one that is not only false but shows no associational nexus to the true purpose of her activity. The distinguishing feature of an instinctive reflex is its compelling urgency. The least delay or opposition to its accomplishment, once it has been aroused by the appropriate stimulus, evokes an intense bodily reaction, and it would appear to be of the imminence of such an explosion of feeling that we speak of as a feeling of compulsion. This feeling of compulsion is the real equivalent of what Bergson terms intuition in respect to instinctive activity. Like the Bergsonian intuition, it cannot be translated into the language of practical thought, nor has it association of a direct nature with aught other than the immediate instinct mechanism. These innate pattern reflexes that we term instincts undoubtedly play an enormous part in the mechanism of conduct. Their recognition in all but such simple cases as I have just now narrated is a matter of great difficulty. They can as a rule be only distinguished from the conditioned habit reflexes by a minute knowledge of the subject's past history such as neither he nor the observer can hope to possess. Much of the vast output of writings on the subject of the instincts that has been characteristic of the last few years loses considerably in value on this account. As I am concerned only with an attempt to show what fundamental knowledge concerning organic disturbances of mechanism can be gained from an objective study of bodily responses and of conduct, I will make no attempt to deal with any system of classification of the different forms of instinctive mechanism. There appears to be a tendency to over elaboration in this direction—Essentia non sunt multiplicanda praeter necessitatem—the "razor" the "doctor invincibilis" has its application in psychological medicine as well as in philosophy. One particularly deplorable move in this direction has been the invention of states or attitudes to take over the very attributes without

which an instinct cannot be recognised as such. Thus to account for the compelling power of the instinctive mechanism that will drive a man into courses of conduct that are directly at variance with his interests in society as at present constituted, we are invited to divest the instinct of its compelling power and to lay it at the feet of an entity termed the "self regarding sentiment" for whose satisfaction we yield to the unprofitable enterprise. There is a flavour of mid-Victorian self-righteousness about this sentiment; it may possibly have been of great usefulness in strengthening the resolutions of conscientious objectors, but the men who sacrificed their interests in the war because they felt that they could not do otherwise had little use for it. The modifications that will be imposed on a primary instinctive mechanism by the pressure of the environment will be incalculable. It is for this reason that in the elucidation of both instinctive reflexes and conditioned habit reflexes their affinities to the affective states are likely to afford a truer if less detailed insight into their nature than any attempt to range them in a tentative scheme of classification.

From what has been said of the relations of bodily response to nocuous and benign stimuli it is obvious that I must consistently range the processes of activity that are distinguished as appetites as being nothing other than responses to nocuous stimuli. From the objective point of view such activities are the response to the present situation of pain and not the pursuit of pleasure. The satisfied man can have no appetites. The nocuous stimulus that arouses our activities is not that conditioned by the desired object itself, but by the limitations imposed by the environment that impede the possibility of our satisfaction by its possession. What is true of appetite is true of desire. As Spinoza remarks, there is no difference between appetite and desire except in so far as the latter implies consciousness. Desire is self-conscious appetite.

SOME NOTES ON
ORIENTAL SORES.

BY M. L. TRESTON, M.R.C.S., L.R.C.P. LOND., I.M.S.,
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MESOPOTAMIA may be described as a land rich in mosques, sand, and oriental sores; as regards oriental sores, a better ground for research could hardly be found than that opened up during the conquest of Irak. Few people left the country without having had an introduction to the sore; many regarded the condition as an unavoidable and trifling evil; some even went so far as to be inoculated on one or other limb in the popular belief that one sore confers immunity. Multiplicity of sores was, however, the rule in cases seen. The incubation period varied from three to six months; cases were more numerous during the cold period—i.e., September to April. The causative agent, the L.-D. bodies, could only be distinguished in the earlier sores—the macular and recent ulcerative type, while the veldt diplococcus could be found in most of the older sores. From the position of the majority of sores various biting insects have been cited as carriers—amongst them the ubiquitous sand-fly and the stomoxys—but definite proof on this point has yet to be established.

The type of sore seen varied from the small bluish-red macule, to the large, irregular, thick-margined ulcers, having scabs dotted with pus puncture holes. The sites, in order of frequency were: wrists, hands, forearms, knees, and feet.

Complications.

In most cases oriental sores run a straightforward course, but complications sometimes arise. One of these is of interest, and was observed in some five cases—i.e., about 0·7 per cent. This was a thrombosis of the vein draining the area in which the ulcer was situated. A peculiarity of the thrombosis was its resistance to medicinal treatment. In one case where the sore was situated on the dorsum of the foot, near the outer two toes, the whole of the short saphenous was represented by a hard thickened cord, a section of which showed successive fibrous laminæ within a thickened vein wall. In two other cases the upper reach of the internal saphenous vein was affected, the sore being on the inner side of the knee; of the remaining cases, one was in the right upper abdomen and the other in the right wrist. In all cases the sore was of some months' duration, and in two cases had apparently healed. The thrombosis refused to clear up under prolonged palliative treatment, and surgical interference, which consisted of complete or partial removal of the affected vein, was required.

Treatment Employed.

The following modes of treatment were tried:—

For early sores—macular and early ulceration stage: (1) X ray applications, one Sabouraud's pastille, once weekly—one to four applications; (2) potassium permanganate crystals: the scab was removed, the base of the ulcer cleaned, and the edges packed with the crystals; (3) methylene-blue; (4) crystals of hyd. perchlor. applied as in 2; (5) injections of tartar emetic: intravenous, starting with ½ gr. doses, and increasing by ½ gr. at intervals of four days. A week's interval, when ½ gr. had been given. Maximum dose 4 gr.; (6) ung. ant. tartrate.

Conclusions.

The results of the various modes of treatment led to the following conclusions: (1) For early sores X ray curative, especially of small sores, with slight, early ulceration; (2) for older sores: potassium permanganate, effective in about 50 per cent. of cases. Methylene-blue of doubtful value; hyd. perchlor. crystals fairly efficacious, but too painful; injections of tartar emetic effective in about 90 per cent. These were picked cases—fairly recent sores and situated usually on the face.

The old sore was the least amenable to treatment of the above type, and the large, thickened scab-forming purulent type of ulcerative sore seldom yielded to medicinal measures. In these cases thorough scraping under $CHCl_3$ and ol. ricini dressing, later replaced by a stimulative ointment dressing, gave the best results.

One's conclusions might, in fact, be tabulated as follows:—

(*a*) For the sore in the early stages: (1) X ray applications; (2) crystals of pot. permang.

(*b*) For the sore in the fairly advanced stage: (1) crystals of pot. permang.; (2) intravenous tartar emetic.

(*c*) For the sore in the more advanced stage: (1) thorough scraping under $CHCl_3$, and application of ol. ricini dressing.

(*d*) For sores in the face, other than those in a very early stage: intravenous tartar emetic.

Under thorough treatment most sores healed within a month. A marked improvement was usually observed after the second injection of tartar emetic.

The scar left was of the tissue-paper variety, with radiating lines of pigment from the periphery. The scar tissue rapidly became darker, especially in the oriental.

London.

ST. ANDREWS INSTITUTE FOR CLINICAL RESEARCH.—A three weeks' course of post-graduate study for general practitioners will be given at the St. Andrews Institute for Clinical Research, Fife, commencing Tuesday, Oct. 4th. The course will consist of lecture demonstrations dealing with methods for the investigation of disease in its early stages, and will be supplemented by demonstrations on matters of clinical interest in anatomy, physiology, chemistry, bacteriology, ophthalmology, and radiology. Graduates desirous of attending this course should communicate as early as possible with the Secretary of the Institute, who will send them full particulars, and will be glad to advise them with regard to securing rooms in St. Andrews.

NOTES ON THE ADMINISTRATION OF HYDROCHLORIC ACID.

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THE address that Prof. Haldane delivered in Edinburgh on March 4th, on Recent Advances in the Physiology of Respiration, Renal Secretions, and Circulation, has rendered it advisable that we should publish certain observations and deductions made in the course of another investigation which is not yet completed. In this we have arrived clinically at similar conclusions to those recently enunciated by Prof. Haldane—namely, that the regulation of the alkaline balance of the blood, and through it of the tissue fluids, is probably one of the most important functions of the kidneys; and that through this regulation the reaction of the tissue metabolism is largely ultimately controlled. During the other investigation referred to it became necessary to administer dilute hydrochloric acid as a routine procedure in a large series of cases, and we did so under the opinion, apparently generally held, that dilute hydrochloric acid was a more or less harmless drug of tonic properties, though we hardly went to the extent of the following statement, published in "The United States Dispensatory," twentieth edition, 1918, p. 37:—

Acid Hydrochloricum dilutum.—The doses which are sometimes employed are absurdly small. When we remember that the normal acidity of the stomach during gastric digestion ranges from 0·2 to 0·3 per cent. of hydrochloric acid—which would necessitate nearly 2 g. of absolute hydrochloric acid for an ordinary meal—the futility of administering 5 to 10 drops of a 10 per cent. solution of this acid is evident. Dose 10 to 60 minims (0·6–3·75 mils.) well diluted.

We soon had reason, however, to alter these ideas, and we found that we were dealing with a remedy which, although frequently taken without much apparent effect, sometimes produced intense and unmistakable results, and we came to the conclusion that the effect was principally renal in its incidence. Through these observations we arrived at the opinion that the kidneys, equally with the lungs, were occupied in maintaining the alkaline, or what is really the almost neutral, balance of the blood.

This kidney regulation appears to us to be a procedure not entirely simple, but depending on a mechanism under the control of influences both chemical and nervous. Under normal conditions, it would seem that the chemical influence is largely predominant, and that the acid factor is the chief controlling force regulating the general proportions of the output of urine.

Adjustment Effected by Acidity of Urine.

The adjustment effected by the acidity of the urine is much finer than is generally supposed. The variation of the renal functions in health is so sufficient and elastic that the regulator is not apparent, but where there are alterations in the normal condition of the kidneys, not sufficient to be considered pathological, but still sufficient to allow it to be disturbed by moderate excess of the acid factor, the effects may be studied with considerable accuracy. So far as our observations go at present these tend to show that the control of the normal excretion of water by the kidneys is largely a question of acidity. That is to say, where the acidity of the blood is increased, the actual quantity of the urinary flow is diminished, as would naturally be surmised, for the body would desire to retain as much fluid as possible to dilute the acid retained in excess of normal. On the other hand, the attempt to get rid of the excess of acid apparently demands a rise of blood pressure (whether directly or through some intermediary is not known), and this rise of blood pressure, by its compensatory action, tends to increase again the fluid excretion of the kidneys. Where dilute hydrochloric acid is administered this result is apparent, because, as Prof. Haldane says, "The kidney alone cannot deal with this acid at all completely," and the blood pressure is raised, by no inconsiderable amount, where renal inability to excrete acid is at all marked. If acid continues to accumulate against the rising blood pressure the symptoms of acidosis manifest themselves, and the whole organism is materially affected, but this is really a late pathological condition.

Acid Sensitives.

The necessity for taking the blood pressure during our administration of dilute hydrochloric acid soon became apparent, on account of our meeting with a series of cases to which we have given the name of "acid sensitives." The more marked cases of acid sensitiveness show such an intolerance of acid that even a dose of five minims thrice daily is keenly resented. This sensitiveness is sometimes manifested in persons who are apparently perfectly healthy. Intolerance of dilute hydrochloric acid (so far we have not completed the observation by giving other mineral acids) is manifested in two ways: (1) by nausea and vomiting, following rapidly on a dose of the acid—apparently a local intolerance; and (2) by the gradual development of circulatory difficulties accompanied by a rise in the blood pressure—a condition which we have been led to believe is of renal origin. We have had four cases in which local intolerance has been sufficiently marked to make us discontinue the use of hydrochloric acid, and ten cases in which the circulatory disturbance compelled us to interrupt its administration. Among the latter class four cases are worthy of particular mention.

In one, where we had the opportunity for continued close observation, a single dose of 20 minims of dilute hydrochloric acid raised the blood pressure in a few hours, on separate occasions, by 20 mm. of mercury. The other effects noted were flushing of the face, increased rapidity and irritability of the pulse, and before long a sensation of slight giddiness as described by Prof. Haldane in his cylinder experiments, when the acidosis was produced by diminished atmospheric pressure. Incidental to the rise in blood pressure there was, in this case, a considerable diminution in the urinary output, with a rise in the specific gravity and in the acid ratio. It has not been considered advisable up to date to repeat the series of experiments as the injury produced lasted for some days.

In another case the effect was most dramatic. Five minims of dilute hydrochloric acid were given three times in 24 hours and the blood pressure rose from 140 to 240. Subsequent administration of alkalies was followed by a fall in the blood pressure to its original reading after three days. The third and fourth cases were very similar. In each 10 minims of dilute hydrochloric acid had been given for some weeks thrice daily with apparent benefit, but when the dose was increased to 15 minims the patients displayed severe constitutional disturbance with at first a rise of blood pressure much above the normal. The pulse became small and incompressible, while the general appearance of the patients was shrunken and sallow-looking, as in extreme old age. The acid was discontinued and at the same time the blood pressure fell and œdema of the legs appeared.

Where small doses, 5 minims of dilute hydrochloric acid, are administered—following our present usual practice—and continued for some time, there is usually a slight primary rise of blood pressure followed in a few days by a fall, as if compensation had taken place. This condition, however, is not usually reversible. A subsequent rise is not easily produced by a slight increase in the dose, though in the two last-mentioned cases acute symptoms of acidosis with high blood pressure appeared when, after a dose of 10 minims

thrice daily had been tolerated with advantage for a considerable period, the dose had been increased to 15 minims to see if further benefit would accrue. The giving of acid was found to produce, in those cases which showed a rise of blood pressure after its administration, an increase in the concentration of the urine just as the giving of alkalies tends to diminish it.

Definite Divisions of Daily Urine.

At the beginning of our observations the urine examined was taken from an ordinary 24-hour collection, but as we soon realised that as the urinary output for 24 hours is composed of three definite parts, the separate investigation of which offered a greater possibility of discovering how the stress of acid increase fell than the examination of a mere daily average. The three parts into which the daily excretion of urine may be divided are:—

1. *Urine passed on waking in the morning.*—This urine, excreted during the night—that is to say, during a period of mental and physical rest in which neither food nor drink are taken, and whilst the body is maintained at an equable temperature—is the most uniform of the three, and may be called the "rest urine."

2. *Urine excreted during the first waking period after rising in the morning.*—This is normally a dilute urine of low acidity, usually called the "alkaline tide urine," and varying considerably according as the balance of acid and alkali excreted by the organism is well maintained. If the quantity of acid eliminated during the night has not been sufficient to maintain the usual balance of acid and alkali in the tissues this urine will show a degree of acidity in excess of the normal.

3. *Urine excreted during the hours of active life.*—The degree of acidity of this urine, which we may call the "functional urine," is largely controlled by the amount of exercise taken, the quantity and quality of the food and drink ingested, and also by variations in temperature.

Of these three urines the most constant as to quantity, specific gravity, and acidity is, as one would expect, that excreted during the night and passed on waking. The acidity of this urine is a valuable indication of the capacity for excretion of the body at rest, and its acidity should be tested in two directions—for ordinary free acidity, and for the concealed acidity as disclosed by neutralising the buffer reaction of ammonia by the neutralised formalin method.[1] The indicator used is preferably phenol red in a 0·02 per cent. solution. Litmus is far too insensitive in the acid direction to be of any use as a real indicator of the acidity, and phenolphthalein, which was used in much of the earlier work, is found to be just too insensitive on the alkaline side—the kidney is never able to produce a urine alkaline to phenolphthalein. To those desirous of complete accuracy the pH used is 7; the comparator being the standard one sold by Baird and Tatlock for the Medical Research Council for the making of culture media. When the urine is neutralised to pH 7 it is recorded as alkaline. There will still, of course, be the concealed acidity released by neutralising the ammonia by formalin. These details are given as, though they are customary in bio-chemistry, they have not yet become the practice in clinical medicine.

Pathological Effects of Acid Administration.

The first pathological effect of acid administration apparent is a failure on the part of the kidneys to excrete the acid accumulated during the day's activities. This incapacity may be due either to a temporary failure in function, or to a real damage to the renal tissues, which is usually permanent. The first effect of functional failure will naturally be to diminish the "alkaline tide" and bring the urine to a higher and more uniform acidity, so that the three samples will be found to differ much less than usual during the 24 hours. The "alkaline tide" will approach the "rest urine" in acidity and specific gravity or, perhaps more usually, the "functional urine," which generally occupies, on account of the balance of activity by the taking of fluid and certain foods, an intermediate place as regards acidity.

[1] Formalin should, of course, be neutralised, using indicator phenol red to pH 7.

The first indication of a permanent interference with the capacity of the kidneys to excrete acid will be a fall in the acidity of the "rest urine." This has long been recognised as one of the prodromal symptoms of Bright's disease, and is often suggested, in the first place, by the disappearance of previously persistent lithates from the urine, indicating an inability on the part of the organism to excrete excess of acid owing to a structural damage to the acid-excreting mechanism of the kidney. A rise in blood pressure may be observed both in cases of functional failure and of structural damage to the renal tissues. A third indication is the constant passing of a urine of low acidity, especially at night, with a marked increase above normal of the quantity passed in the day, due to a high pressure blood flow combined with diminished capacity to excrete acid. In such cases the three types of urine differ little or not at all in character. The whole 24 hours' urinary output is at a constant "injured maximum."

These conditions are due to an injury to the kidney in respect of its capacity to eliminate acid and are natural enough whether the hypothesis held is the theory of direct excretion or of reabsorption. They are always associated with a urine of constantly low specific gravity. Cases whose renal function is so crippled are curiously "acid sensitive," and a very small dose of dilute hydrochloric acid will raise their blood pressure and induce unpleasant symptoms.

Conclusions.

We recognise that these notes are not by any means complete, as this investigation is really only commencing and is a side issue of a larger investigation on which we hope to report at a later date. We felt, however, in view of Prof. Haldane's lecture confirming our observations of the extreme importance of the acidity of the urine in the regulation of the kidney system, that the importance of the estimation of the renal functions in this direction should be emphasised from a clinical point of view, while the material importance of estimating the blood pressure in all cases where acid was being administered should be reported. In this connexion, had the value of this estimation been known in the two cases in which acid was being given by one of us, in which much injury resulted, the error would have been avoided.

So far, experience has taught us that dilute hydrochloric acid is not, in acid sensitive cases at least, the harmless tonic the books would have us believe it to be, and we are sure that when acid is being administered the blood pressure should always be estimated from time to time, and the urine be occasionally tested for its acid and ammonia relations. We also feel that in cases where an early condition of renal insufficiency is suspected, the "rest urine" should be compared with the "alkaline tide urine" in respect of their relative acidity.

The conclusions arrived at are:—1. That acid largely regulates the amount and character of the urine excreted, by its action on the renal tissue. 2. That this is largely controlled by the increasing acidity of the blood (acidæmia) tending to raise the blood pressure; otherwise the kidneys would not be able to maintain the necessary balance between acid and alkali. This regulation is so delicate that in health the normal variation of blood pressure is not apparent, other causes of increased pressure contributing to its concealment. 3. That when impairment takes place owing to the breakdown of the chemical balance, general acid sensitiveness occurs, and this condition is accompanied by a rise in blood pressure.

If the structure of the renal cells is not injured this is not maintained unless the acidæmia continues. If the structure of the cells is injured, the rise of the blood pressure is more or less permanent until other forms of compensation are established. When this structural alteration has occurred acid administration and acid feeding are contra-indicated. Where acid is being administered in doubtful cases the blood pressure should always be observed, to avoid the

danger of overdose. Overdose is also indicated by the "alkaline tide urine" approaching the "rest urine" in character.

Since hearing Sir Almroth Wright's lecture on Acidosis delivered at St. Mary's Hospital subsequent to these notes being compiled, we have come to the opinion that the reason why, during treatment with acid, a rise in the blood pressure is reversible—i.e., followed by a more or less similar fall, while this subsequent fall in blood pressure is not easily reversible—is because an acidosis may be transferred to the tissues, the acidæmia thus being changed into a histo-acidosis, and this causes a fall in the blood pressure. If a histo-acidosis be established it is not easy to raise the blood pressure again, because of the difficulty either of raising the acid content of the blood above that of the tissues or of reducing the acidity of the tissues below that of the blood, the fluid pressure thus persisting towards the tissues, while the balance is against the blood. Such a hypothesis would explain what occurred in the two cases referred to above, in which acidæmia took place.

In these cases œdema and a very considerable fall of blood pressure occurred after the discontinuance of the acid and the condition was not readily reversible. The administration of the alkalies did not remove the œdema, although following on very small infrequent doses of acid the œdema disappeared, and there was a slight rise in blood pressure. This sequence of events would seem to support the idea that an acidæmia had developed into a histo-acidosis.

THE ACTION AND USES OF KAOLIN IN THE TREATMENT OF ASIATIC CHOLERA.[1]

BY RONALD R. WALKER, M.D., B.CH. CAMB.

POSSIBLY the earliest mention of cholera is in the time of the Yellow Emperor of China, circa 1500 B.C., when five general "body conditions" were described. The Ganges bed in India is, however, generally regarded as the home of the disease, and in late historical times, epidemics in 1500 and 1700 A.D. are on record. In 1817 and 1837 there were world-wide epidemics. In every case the infection followed lines of travel—e.g., caravan routes, pilgrimages, lines of ships, &c. Between 1817 and 1823 this plague spread from India through China and as far west as Egypt. During 1826–27 Europe became infected, and thence, via England, Canada and the U.S.A. From 1837–93 Europe has had successive visitations resulting in a death-rate in Russia in one year of 800,000, and in Hamburg of 8600.

In the year 1883 Koch discovered the cholera organism, which he called the comma bacillus or cholera spirillum. This spirillum is a small organism 1·5–2 μ in length, curved on one axis and provided with a single flagellum which causes it to be highly mobile. The bacillus grows freely in alkaline broth or on alkaline agar. It stains readily with weak carbol-fuchsin, and solutions of the culture give a rose-pink colour reaction on the addition of pure sulphuric acid; according to Grieg, true cholera vibrios are non-hæmolytic. Agglutination tests against a high titre anti-cholera serum will differentiate between the true cholera and paracholera or El Tor vibrios.

The disease in man is characterised by general systemic disturbance. Vomiting, profuse watery diarrhœa, muscular cramps, cold clammy condition of the surface, suppression of urine, are the general characteristics. The onset is sudden as a rule, and in the most virulent infections a condition of cholera sicca occurs, where the patient dies before the diarrhœa has set in.

[1] A paper read at the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, April 19th, 1921.

Bolus or Kaolin Treatment.

Treatment has been directed to meet all conditions which occur. Potassium permanganate, opium, saline injections, subcutaneously and intravenously, hypertonic solutions of saline (Rogers) have been used with considerable effect. It was, however, during the Balkan epidemic at the close of the Balkan War, 1913, that Stump's bolus treatment (bolus alba) was tried at Nish by Dr. Victor Kulme [2] with remarkable results. Bolus alba, or kaolin (China clay), is aluminium silicate, $H_4Al_2Si_2O_9$, a salt insoluble in water, with crystals of 1 μ in length in a fine state of division. This salt was in use in early Roman times, and was also used by the natives of the Orinoco. It has also been employed in diphtheria in Germany, as a powder insufflated on the fauces and tonsils, and also a mixture internally. It has also been used in ptomaine poisoning with success (Mutch), also in dysenteries, summer diarrhœa of children, and its use is indicated in the treatment of sprue and toxic conditions. The general effect of the salt seems to point to the absorption of toxins. By the use of this salt Kulme claims that the mortality in the cases treated was reduced from 60 per cent. to 3 per cent. The method of preparation was as follows: A suspension was made of equal amounts of water and kaolin, the kaolin being stirred into the cold water—i.e., 100 g. kaolin to 250 c.cm. aq. Half-pint doses of this suspension were taken half-hourly for the first 12 hours, the second 12 hours several glasses were taken, according to the patient's condition. Vomiting soon ceased, the pulse improved, and the patient slept.

During the summer of 1919 China was visited by a severe epidemic of cholera, and Dr. Louis Braafladt,[3] of Tsinanfu, has given the result of the use of kaolin The method of administration was somewhat different from Kulme's; and his treatments and results are as follows:—

1. Hypertonic saline treatment, after Sir Leonard Rogers—mortality 22 per cent. Convalescents discharged on eighth day.

2. Kaolin and hypertonic treatment—mortality 29 per cent. Convalescent patients discharged on the sixth day.

3. Kaolin treatment only—mortality in 35 cases one patient (this patient died of gangrene of uterus after miscarriage). Convalescent patients discharged after four days.

All these patients had true cholera vibrios isolated during their stay in hospital. In cases of the Asiatic cholera treated in Foochow at the American Red Cross hospital when first opened no definite hard-and-fast line of treatment was maintained. Cases were treated by continuous subcutaneous injection of normal saline, with administration of potassium permanganate by the mouth until the motions became green. Hypertonic intravenous saline injections (Rogers) were given in amounts up to three litres or until the blood pressure became normal. Dextrose was added in some cases to the intravenous solutions.

Whatever method was used, some features of the disease remained constant:—

First, that although the patient on arrival might appear moribund, being cold, rigid, and with imperceptible pulse, the introduction of saline could usually be relied on to produce return of consciousness and a greatly improved pulse. With the hypertonic intravenous solutions a rigor of great intensity could be looked for before the end of the introduction of the second litre. This, however, was disregarded and the saline was continued until the blood pressure had attained the normal. (A point of interest was noted in the treatment of these cases—namely, that when no superficial vein of the body could be demonstrated suitable for the introduction of the saline, through the extreme loss of fluid, or through the

[2] Revue Médicale de la Suisse Romande, September, 1918.
[3] China Medical Journal, May, 1920.

needling done by native physicians in the veins for the purpose of letting out the "toxic blood," the vein passing over the internal malleolus on the inner side of the foot could always be found.)

Secondly, that relapses were the rule; sometimes even before the completion of the injection of a second patient was completed the first patient, through excessive diarrhœa and vomiting, might be urgently requiring more fluid.

Thirdly, that cases which could be supported until the acute diarrhœa and vomiting had passed, were still in grave danger from suppression of urine. This persisted in some of the cases for six days. The only remedy seemed to be the use of almost continuous "cupping," usually by means of a de Bier's suction glass over both kidneys.

During the epidemic in Foochow in the summer of 1919 kaolin was used by myself with considerable success, but there was difficulty in obtaining a good supply. On my return to Hing Hwa, where cholera was raging, I had no difficulty in obtaining kaolin, as the famous Blanc de Chine clay beds are situated near this district.

The method of administration was somewhat different from Stump's methods. A large supply of half-and-half suspension was placed near the patient and the nurse was told to encourage the patient to take as much as possible. At the commencement large quantities could be tolerated, but as the vomiting and diarrhœa ceased the liquid was refused. In all cases food was withheld for 18 to 24 hours, then rice water was allowed, and later milk and rice water. In all cases rectal lavage was done with kaolin solution thickened until it would comfortably pass through the rectal tube. At first none was returned. Later on much was retained. If the condition of the patient was precarious on arrival at hospital, it was found that subcutaneous bilateral infusion usually restored the patient sufficiently to take kaolin by the mouth. In desperate cases hypertonic salt solution was given intravenously (Rogers), but no such large quantities as we used before the introduction of the kaolin treatment (2 litres). This is shown to be of value by the results obtained by Braafladt with hypertonic saline and kaolin, which were not so good as those obtained with kaolin alone.

Advantages of Kaolin Treatment.

After the introduction of the kaolin method the following differences were noted: if the patient's condition was "fair"—that is to say, that the pulse was perceptible and the patient conscious—the introduction of large quantities of kaolin suspension by the mouth and per rectum would ensure the patient's continued recovery. After two hours all vomiting ceased, a sense of safety had been reached, and the patient usually slept.

In the lighter cases 12 hours saw the cessation of diarrhœa and 24 to 36 hours the passage of urine. In the most critical cases, which required the introduction of saline to bring about an improvement of the pulse, rectal introduction of heavy suspensions of kaolin were commenced at once and had a marked effect in preventing the further loss of fluid. On return of consciousness and during the introduction of the saline kaolin was given by the mouth and was usually retained, while in those cases which vomited it was felt that some kaolin had been deposited on the walls of the stomach which began to absorb the toxic products of the cholera vibrio; the second administration of the kaolin suspension by the mouth was frequently retained or only partially returned.

So the most marked advantages of the kaolin treatment were: (1) simplicity of method; (2) absence of relapse; (3) cessation of loss of fluid; (4) great improvement in the condition of the patient from the absorption of toxins, the patient becoming rapidly free from a general "toxic condition"; (5) early return of the passage of urine; (6) early and rapid convalescence.

In cases treated in St. Luke's Hospital, Hing Hwa, we had a series of 75 cases from one village, situated two hours' journey from hospital, with no fatal results, and this result was obtained in spite of the fact that many of the patients arrived at hospital in a condition of extreme collapse. The mortality of untreated cases at this village was stated by the village headman to be exceedingly high, though I was unable to obtain exact figures owing to the absence in China of any registration of deaths.

Laboratory Experimental Work on the Action and Effect of Kaolin.

In a rabbit fed with 20 c.cm. of a 50 per cent. kaolin suspension, on chloroforming 18 hours later, well-marked traces of kaolin were found over the walls of the stomach, duodenum, and upper small intestine, increasing in amount down the lower small intestine to the cæcum, which was full of liquid contents mixed with kaolin. The colon was full of dry masses of dark brown fæces, which on opening showed white kaolin inside.

In a rabbit fed with 20 c.cm. of a 50 per cent kaolin suspension, and also 20 c.cm. of a 50 per cent. kaolin suspension rectally, chloroformed 42 hours later, the stomach and duodenum distended by a new vegetable meal showed no signs of kaolin, but there were traces on the walls of the upper small intestine which increased in amount to the cæcum, while the transverse and descending colon were full of dry masses of kaolin and fæces mixed.

A further experiment was done to show the microscopical appearance and position of the kaolin in the intestinal tract. A rabbit was fed at 9 A.M. with 20 c.cm. of a 30 per cent. kaolin and water mixture; at 12 mid-day this was repeated, and the rabbit killed at 2 P.M. Sections of the stomach, upper and lower small intestine and large intestine were taken, the gut being stretched on cork rings to prevent retraction on hardening. These were fixed, hardened, cut, and stained with eosin and methylene-blue.

Under a low power the kaolin could be seen lying in a thin line in close apposition to the mouths of the glands. Much of the kaolin had fallen away in the course of preparation. Under a high power it was possible to make out the kaolin, sticking closely to the cells, and in some cases the cells had torn away, adherent to the kaolin layer in process of preparation.

Cultures of cholera vibrios from Guy's Hospital bacteriological laboratory and the Lister Institute were used throughout the following experiments in duplicate. Intraperitoneal inoculations were made through three series of guinea-pigs to raise the virulence. The resulting cultures gave typical pure cholera reactions and were those used in the following experiments. To broth cultures of *V. choleræ* varying strengths of kaolin were added. Later, agar plates were planted from this mixture, and the results given in Table I. were obtained, thus showing that the presence of kaolin in cultures of *V. choleræ* had no bactericidal effect.

TABLE I.

Kaolin suspension strength.	Agar plate after 24 hours' growth.	Result.
1·8 per cent.	–	++
2·5 ,, ,,	–	++
5·0 ,, ,,	–	++
10·0 ,, ,,	–	++
20·0 ,, ,,	–	++

TABLE II.

V. choleræ through silk.	Filtrate grown on agar.	Result.
1·0 c.cm. of 5% kaolin suspension	–	++
2·5 c.cm. ,, ,, ,,	–	++
5·0 c.cm. ,, ,, ,,	–	++
7·5 c.cm. ,, ,, ,,	–	++
10·0 c.cm. ,, ,, ,,	–	++
20·0 c.cm. ,, ,, ,,	–	++

Filtration of suspensions of *V. choleræ* were then made through varying thicknesses of kaolin deposited on silk, as given in Table II., thus showing that cholera bacilli can pass through kaolin.

Agar tubes were prepared with kaolin mixed in the agar in varying amounts. It was found that the presence of kaolin had no effect on the growth of the cholera bacillus.

As far as the above experiments go, it is clear that the presence of kaolin in the bowel can have no other than a merely mechanical effect on the cholera vibrio itself. This mechanical effect, however, may be instrumental in sweeping out a very large quantity of active cholera vibrios, and it should be remembered in using this treatment that the disinfection of the stools is essential; also that it is quite possible that many of the patients return home as cholera carriers.

Preparation of Toxins.

Half-litre flasks of alkaline peptone water were used, incubated at 37° C. for periods of 4, 6, or 14 days. The above medium was filtered by means of an exhaust pump through a porcelain candle. The filtrate was sterile, shown by planting on culture media. The hollow tube of the candle was scraped to remove the deposited bacilli, which, mixed with normal saline, were heated at 60° C. for an hour. Both the filtrate and the saline emulsion containing the dead bacilli were tested as follows:—

Pulp was spread thinly over a perforated plate and 100 c.cm. of a 10 per cent. kaolin suspension poured over this bed. The above liquids were filtered through by means of a vacuum pump. It was found that no indol reaction was obtainable with the filtrates obtained. Commercial indol, on the other hand, filtered through this bed. Tests were made as shown in Table III.

TABLE III.

1. Formalin and strong sulphuric acid	No colour with filtrate.
Filtered commercial indol solution and above reagent	Blue colour.
With unfiltered toxin solutions ..	Blue colour.
2. Glyoxalic acid / Strong sulphuric and filtrate ..	No reaction.
" " and indol solution	Red.
" " and toxin solution	Red.
3. Nitric acid and filtrate	No reaction.
" " " indol solution ..	Red.
" " " toxin solution ..	Red.
4. Sod. nitro-prusside (fresh sol.) and filtrate ..	No colour.
" " " (fresh sol.) and indol solution	Violet, changing to green-blue.
" " " (fresh sol.) and toxins	Violet on addition of acetic acid.
5. Filtrate extracted with benzol and No. 4 test applied	No colour.
Toxin extracted as above gave characteristic indol reactions.	
6. Paradimethylamido-benzaldehyde / Alcohol / HCl. / Potass. persulph. (equal parts) and filtrate..	No colour.
" " and indol sol.	Pink.
" " and toxin ..	Pink.

The above series of tests were made as the fact of the "toxin" being held back by the filter bed while indol solution came through pointed to the possibility that the toxin giving indol reactions is not a true indol, but a larger molecule which is held back by the China clay filter, while the commercial indol, which has a small molecule and is in solution, can get through.

A further series of experiments was made to test the absorptive power of kaolin for "indol," as found in the *V. choleræ* toxin-peptone water culture fluid. Week-old *V. choleræ* toxin was taken and well mixed with equal weights of kaolin. Of this mixture 1 c.cm. was withdrawn every five minutes for an hour and a half and tested with Ehrlich's indol reagents. A standard colour series was made with commercial indol solutions of dilutions up to 0·0001 g. per c.cm. added to Ehrlich's reagents, and it was found that after centrifugalising 1 c.cm. of kaolin and toxin suspensions at five minute intervals no variation in the indol colour index was obtained, thus showing that the suspension of kaolin in *V. choleræ* toxin cultures had no absorptive action on the indol in the culture.

A further series of experiments was made to test the action of kaolin on ferments. Rennet and trypsin were used. (Table IV.)

TABLE IV.

	Result.
Rennet and milk	Coagulation.
Rennet centrifugalised and milk ..	Coagulation.
Rennet shaken with kaolin and milk..	Some delay in action.
Rennet and kaolin shaken at intervals for half an hour. Centrifugalised: clear liquid added to milk.	Considerable delay in action.
Rennet filtered through kaolin bed and filtrate added to milk.	No action.

The same experiments were performed with trypsin, and the digest of gelatin plates used as indication of action of ferment. The same results as above were obtained and it was found that trypsin filtered through kaolin beds had no digestive action on the gelatin plate. It was found that 3 c.cm. of a 10 per cent. kaolin suspension caused rapid death in a rabbit if injected intravenously. Death was caused by deposit of kaolin on valves and walls of the heart and subsequent clotting of the blood. Six c.cm. of a 1 per cent. suspension had no apparent effect on the rabbit. On post-mortem examination 24 hours later no kaolin could be detected in the blood. Intraperitoneal injections of 10 c.cm. of a 20 per cent. kaolin suspension in a guinea-pig caused death in 20 hours. Post mortem: signs of peritonitis. Masses of kaolin were present everywhere in the abdomen. The lower surface of the diaphragm and the omentum were thickly plastered with kaolin. Slide preparations were made of the mesentery and omentum, but it could not be demonstrated that the lymphatics were packed with the salt, though its presence, adherent to the cells, was obvious everywhere.

Toxins.

The culture used in the experiments given in Table V. was one from a fatal case of cholera in India. The vibrio was non-hæmolytic, agglutinated well, and gave typical reactions of a cholera vibrio. Half-litre flasks of alkaline peptone water were used. These were sterilised three times with an interval between sterilisation to remove all spore-bearing bacilli. The resulting toxins were examined at 4, 6, and 14-day growths. It was found advantageous to have wide-necked flasks so that as large a surface area as possible might be presented to the air. The resulting bacillary growth was moved each day by shaking, when it fell to the bottom of the flask and a new growth appeared. To obtain a virulent culture for growing the following method was adopted.

A rabbit was inoculated intra-peritoneally with one tube of 24 hours' growth of the strain mentioned above. On chloroforming in three hours' time it was found that all signs of the cholera vibrio had disappeared, and no growth was obtainable. Therefore passaging was then done through a series of five rabbits, each being killed two hours after infection, the growth cultivated on agar for 24 hours and the whole culture injected again. By this method a more virulent organism was obtained, a tube culture of which would kill a rabbit in 20 hours. One loop of culture killed in five days with progressive wasting.

A. Toxins were grown from cholera vibrio .. No passage.
B. " " " " " .. 3 passages.
C. " " " " " .. 5 "

Finally:

D. Toxins were grown from the five passages *V. choleræ* injected into a rabbit, with the addition of some of the four-day toxins grown from the five passages *V. choleræ*.

The four strengths of "toxic fluids" were then investigated as follows:—

1. The toxic fluid was filtered through a porcelain candle by means of an exhaust pump. The filtrate, which was clear, was injected intravenously and intraperitoneally into two rabbits with no fatal results. Amounts up to 4 c.cm. were used.

TABLE V.—*Culture Medium—Alkaline Peptone Water.*

(2 c.cm. injected intravenously in each case as recorded below.)

—	Days' growth of culture.	Peptone medium filtered through porcelain candle.		Bacillary deposit of last column ground in bacillary mill, picked up in saline, and refiltered through candle.		Fatal fluids of above experiments filtered through kaolin filter-beds and filtrate injected.	Above fluids shaken with kaolin, centrifugalised and injected.	2 oz. kaolin placed in ½-litre flask of peptone culture medium.	Control without kaolin.
		Filtrate.	Bacillary deposit.	Filtrate.	Deposit.				
A. Toxins grown from V.C., no passage.	4	−	+ 24 hrs.	..	..	−	−	..	..
B. Toxins grown from V.C., 3 passage.	4	−	+ 12 hrs.	−	+ 12 hrs.	−	−	..	..
	6	..	+ 12 hrs.	−	+ 12 hrs.	..	..	..	..
	14	..	−	−	−	..	..	..	..
C. Toxins grown from V.C., 5 passage.	4	−	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	−	−	..	..
	6	..	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	−	−	..	..
	14	..	−	−	−	..	..	..	..
D. Toxins from 6 passage (being 5 passage V.C. injected with four-day-old toxins added).	4	−	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	−	−	−	+
	6	..	+ 8 hrs.	+ 8 hrs.	+ Under 8 hr.	−	−	..	..
	14	..	−	−	−	..	..	..	..

\+ Fatal. − Not fatal.

2. The deposit was scraped from the hollow tube of the candle, mixed with a small quantity of 0·8 per cent. salt solution, and then "killed" by one of three methods: (*a*) heat at 60° C. for an hour; (*b*) Finsen light, one hour exposure; (*c*) chloroform added to the solution in sufficient amount to leave a clear layer of chloroform showing. After shaking the mixture, five minutes killed the *V. choleræ*. (The method of killing the *V. choleræ* appeared to have no marked effect on the results obtained—the "toxins" could be heated at 60° C. to dryness and yet retain their virulence.)

This killed deposit was then injected intravenously into rabbits; 2 c.cm. was fatal, the time varying with the strength of the toxin.

3. The above deposit was then ground in a bacillary mill to break up the bacilli, and after mixing with 0·8 per cent. saline, was again filtered through the porcelain candle.

4. The filtrate was found fatal to rabbits if 2 c.cm. were injected intravenously.

5. The deposit was also fatal to rabbits, being more rapid in its action than the filtrate.

I am greatly indebted to Prof. J. W. H. Eyre, of Guy's Hospital, for his kind assistance in the above experiments.

General Conclusions.

The action of kaolin is two-fold: (1) Mechanical; (2) adsorptive.

1. *Mechanical.*—The administration of such large quantities of kaolin as are used in the treatment of cholera almost fill the bowel, and the passage of this mass through the bowel must enclose and carry with it a very large number of bacilli. It has, however, no bactericidal effect, and this fact calls for energetic action in the destruction of fæces in all cholera cases treated by this method. The fact that the kaolin forms an adherent coating to the walls of the bowel point to its usefulness in ulcerative forms of colitis, though in these cases the rectal method of administration in the form of enemata and long-tube lavage would be preferable owing to the possibilities of errors of digestion arising, after long administration, due to the adsorptive properties of kaolin for ferments.

2. *Adsorptive.*—This, the chief function of kaolin, is very marked; its extremely fine state of division lends itself to that end. From the above experiments it is clear that, at least in the case of cholera, and probably in diphtheria, ptomaine poisoning, bacillary diarrhœa, and general toxic conditions, kaolin has a wide range of use. In cholera, the first result of its administration is the cessation of vomiting. This seems to be due to the adsorption of toxic bodies in the upper alimentary tract. This is followed by cessation of diarrhœa and consequent loss of fluid which is caused by the presence in the bowel of irritant substances of a toxic nature. These being adsorbed by the kaolin cease to act as an irritant, and consequently the improvement of the patient is rapid and maintained. The presence of a layer of kaolin on the walls of the intestinal tract would appear to act partly as a filter-bed and prevent the transmission of toxins to the patient. The adsorptive action of kaolin does not appear to be chemical.

Professor Bayliss has pointed out that kaolin is an electro-negative colloid, which sign may become changed by allowing it to adsorb ions of opposite sign to itself (Bayliss, p. 72); this, I take it, occurs in the small intestine.

I am indebted to Professor Russ and Mr. Clark (of Middlesex Hospital Cancer Research Department) for the following fact (experiments were made after Hardy's method, *Journal of Physiol.*, xxxiii., p. 289): Cultures of cholera vibrio in an alkaline medium gave a definite electro-negative sign. So the adsorption of cholera toxins by the kaolin may be explained by the electrical reaction between the two, and the failure of the toxin to reach the circulation may be explained by the electro-static attraction of the suspensoid kaolin for the cholera toxin, which thus forms one component of a Helmholtz double layer. Professor Bayliss has pointed out that sodium chloride diminishes electro-negative charge, in accordance with Gibbs's principle; this may be the explanation of the marked difference in treatment of cases of cholera which have had saline injections preceding the kaolin treatment, to those treated only by kaolin.

THE LATE DR. VICTOR DONALD ORR LOGAN.—Dr. Logan died at St. Mary's Hospital, London, last week from injuries received through being knocked down by a motor cycle in Bayswater-road. He graduated M.B., Ch.B. Edin. in 1909, and was a temporary Captain, R.A.M.C. Formerly he was resident medical officer at St. Mary's Hospital, Plaistow, to the Sussex County Hospital, Brighton, and to the Prince of Wales Hospital, Tottenham. At the time of his death he was in practice at Liverpool.

THE INADEQUATE ATTENDANCE OF THE MALE SYPHILITIC OUT-PATIENT.

BY R. E. ROBERTS, M.D. LIVERP., B.Sc., D.M.R.E., D.P.H.,

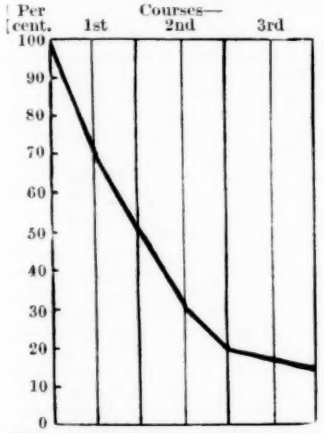
REGISTRAR, X RAY DEPARTMENT, ASSISTANT PATHOLOGIST AND SENIOR CLINICAL ASSISTANT, V.D. DEPARTMENT, LIVERPOOL ROYAL INFIRMARY; HONORARY RADIOLOGIST, WALLASEY VICTORIA CENTRAL HOSPITAL AND BIRKENHEAD BOROUGH HOSPITAL.

DURING an investigation at the Liverpool Royal Infirmary venereal diseases clinic, begun in 1918, on the effect of various forms of anti-syphilitic treatment upon the Wassermann reaction (which investigation has been continued since 1920 for the Medical Research Council), it was observed that the great majority of patients failed to complete their treatment, or even part of their treatment; in fact, only about 25 per cent. attended sufficiently regularly, even for a short period, to render their records of the slightest value for the investigation in hand.

An attempt has therefore been made to analyse carefully the attendances of new patients during the year beginning July 1st, 1918, in the hope of ascertaining the factors governing non-attendance and also of discovering remedies.

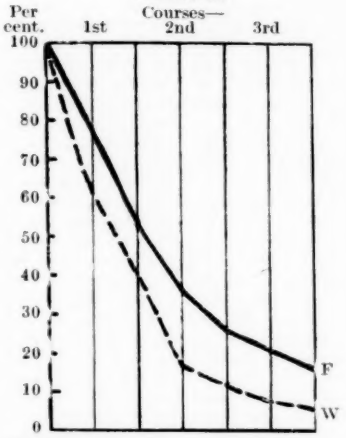
In Table I., and in the other tables and charts, the "first course," extending over three months, consisted of 6 intravenous arsenic injections and 8 intramuscular mercury injections, followed by 1 month's rest. The "second" and subsequent courses varied according to the patient's condition, but extended in each case over a period of 3 to 4 months.

CHART 1.



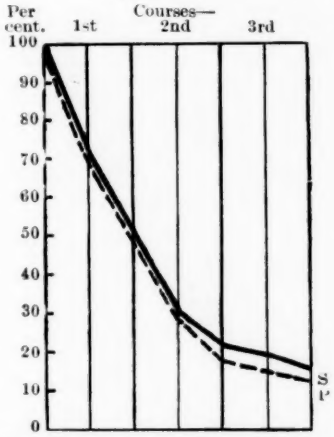
The chart shows attendances of 517 new cases of primary and secondary syphilis, demonstrating the rapid falling-off in attendances after admission.

CHART 2.



The chart shows the attendance of 197 patients with fixed local abode and 121 "wandering" patients, demonstrating that their fixity or otherwise of abode has a moderate influence upon subsequent attendance. (See Table II., cols. 8 and 9.) F, "Fixtures"; W, "Wanderers."

CHART 3.



The chart shows attendances of 109 cases of pure primary and 145 cases of pure secondary syphilis, demonstrating that the severity of the disease has very little influence upon the patient's subsequent attendance. (See Table II., cols. 1 and 3.) P, Primary; S, Secondary.

It will be seen from Table I. that 801 new patients suffering from syphilis were admitted during the 12 months. (Patients who were subsequently "transferred" to other hospitals or clinics have been omitted from the table as their inclusion would vitiate the results of this inquiry.)

Attendance of New Patients for Treatment and Observation.

In Table II. the attendances of the various classes of patients have been expressed in percentages. A glance at the table will reveal the rapid falling-off in attendances of every type of patient.

The patients who ought to attend for the longest period are those admitted in the primary and secondary stages; for they have, as a rule, received little or no previous treatment, and should attend for treatment or observation for periods varying from two to four years before they can safely be struck off the register as "cured." Their attendances are recorded graphically in Chart 1. We see that of these cases only 50 per cent. reached the end of their first course, 20 per cent. reached the end of their second course, 14 per cent. reached the end of their third course.

Consideration of Some Factors Influencing Attendances.

1. *Influence of Fixity of Abode upon Attendances.*—In a port such as Liverpool it is too readily assumed that those who fail to attend are chiefly seafarers, and their absence is therefore unavoidable. To ascertain if this were so new patients were divided into two groups: (*a*) "Fixtures"—those having an occupation which allowed of a permanent abode in the district; (*b*) "Wanderers"—those, such as seafaring men, bargemen, commercial travellers, variety artistes, &c.—whose occupation entailed a more or less wandering existence. The attendance of the two groups are given in Chart 2. The curves show that the nature of a man's occupation does not play the large part in his attendance behaviour one might anticipate. They incidentally demonstrate that less than 20 per cent. of patients with fixed local abode reached the end of their third course—a very discouraging discovery.

2. *Influence of Severity of Syphilitic Symptoms on Admission upon Attendance.*—It was expected that a man admitted suffering from generalised (secondary) symptoms would be more alive to the possibilities of the disease than one suffering from localised (primary) symptoms only, and consequently attend better. The attendances of patients admitted (*a*) in the primary stage, (*b*) in the secondary stage were therefore ascertained. (See Chart 3 and Table II., cols. 1 and 3.) It is seen from the chart that one's expectations were not realised, for there is very little difference between the attendances of the two groups of cases.

3. *The Influence of a Negative Wassermann Reaction upon Attendances.*—It was discovered that one of the commonest causes for the cessation of attendance was the patient's belief that a negative Wassermann reaction indicated recovery. When absentee patients who had been recalled by letter cards were interrogated, the majority replied, "My blood test was negative, so I thought I was cured." The relation-

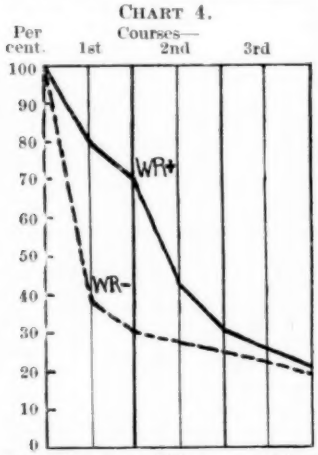
TABLE I.—*New Cases Admitted during Twelve Months beginning July 1st, 1918.*

—	Stage of disease on admission.						
	Prim. syph.	Prim. and second.	Sec. syph.	Tert. syph.	Latent syph.		Neuro-syph.
					*W.R. +	W.R. −	
Total number admitted	263	109	145	68	139	64	13
Number who attended for—							
No intrav. injections	36	13	15	10	21	27	2
1 injection only	25	6	17	7	5	2	1
2 injections ,,	18	13	9	6	3	11	1
3 ,, ,,	22	6	9	6	9	1	0
4 ,, ,,	21	8	13	7	2	3	0
5 ,, ,,	13	9	9	4	2	1	2
6 ,, ,,	54	21	29	14	38	2	3
1½ course only	26	6	12	6	17	1	2
2 courses ,,	8	3	5	2	6	1	0
2½ ,, ,,	6	5	6	2	7	3	0
3 ,, ,,	5	5	1	1	3	1	0
More than 3 courses	29	14	20	3	26	11	2

* Wassermann reaction positive (+) or negative (−) on admission.

ship between the attendance of 203 cases of latent syphilis and their Wassermann reaction was analysed; in 139 cases the Wassermann reaction was positive on admission, in 64 it was negative. (See Chart 4 and Table II., cols. 6 and 7.) As a remedy an attempt has recently been made at the infirmary clinic to keep the patients in ignorance of the result of the Wassermann test by using symbols instead of words. Sooner or later, however, they learn, directly or indirectly, the meaning of the symbols. It is therefore absolutely essential that patients should be taught to realise the necessity of attending for blood tests regularly for a long period after cessation of active treatment.

CHART 4.



The chart shows 203 cases of latent syphilis, demonstrating that cessation of attendances is much greater in patients with a negative Wassermann reaction on admission than in those with a positive. (See Table II., cols. 6 and 7.)

4. *Other Factors Influencing Attendance.*—Various other possible factors were considered, but as their influence was not studied statistically, mention only will be made of them; they include the following: 1. Ignorance or callousness—the type of patient who states that he ceased to attend because, his symptoms having disappeared, he "didn't feel anything from it," so he "thought he was all right." 2. Patient's lack of financial interest in his treatment or cure. In my opinion this factor is of considerable importance, but it is acknowledged that there is much to be said for free treatment.

The Letter Card as a Remedy for Absenteeism.

The deplorable state of affairs as regard attendances revealed above has to a great extent been remedied by the adoption of a system of sending letter cards to recall absentee patients. The results have been very satisfactory from the medical officer's point of view. One must admit that in certain instances the employment of letter cards is resented by patients and tends to drive them to other clinics where they are not used. On the other hand, the fear of receipt of a letter card has a very salutary effect in maintaining the regularity of attendances of others. The effect of these letter cards and the relative value of sending one, two, or three cards is seen in Table III. It will be observed that 44 per cent. of the absentees attended on receipt of one letter card; a further 9 per cent. on receipt of a second letter card; and a further 1·5 per cent. on receipt of a third letter card. Thus the attendance of over 50 per cent. of the absentees was secured by this means. It would appear that the majority of the remainder, who had either given the wrong address on registering (8 per cent.), or who had apparently quietly ignored the letter cards (35 per cent.), could only be reached by legislative means. While they "play the game" by

TABLE II.—*Attendances in Percentages.*

—	Stage of disease on admission.							Abode.	
	Prim syph.	Prim. and sec.	Sec. syph.	Tert. syph.	Neuro-syph.	Latent syph.		Wan-derers.	Fix-tures.
						W.R. +	W.R. −		
Number admitted	263	109	145	68	13	139	64	121	197
Percentage of number admitted	100	100	100	100	100	100	100	100	100
Percentage who attended for—									
1 injection only	86·2	88·0	90·3	85·2	84·6	84·8	57·8	82·6	93·4
2 injections ,,	76·8	82·5	77·9	75·0	76·9	81·2	54·7	71·9	83·7
3 ,, ,,	69·9	70·6	71·7	66·1	69·2	79·0	37·5	63·6	76·6
4 ,, ,,	61·5	65·1	65·5	57·3	69·2	72·6	35·9	55·3	70·0
5 ,, ,,	53·6	57·7	56·5	47·0	69·2	71·2	31·2	44·6	59·9
6 ,, ,,	48·6	49·5	50·3	41·1	53·8	69·8	29·7	41·3	53·3
1½ course only	28·0	30·2	30·3	20·6	30·7	42·5	26·6	16·5	36·0
2 courses ,,	18·2	24·7	22·0	11·8	15·3	30·2	25·0	12·3	26·4
2½ ,, ,,	15·2	22·0	18·6	8·8	15·3	25·9	23·4	8·2	21·8
3 ,, or more	12·9	17·4	14·4	5·9	15·3	20·9	18·7	7·4	16·7
Column.	1	2	3	4	5	6	7	8	9

attending, let secrecy be the rule; but when they cease to attend and resist all efforts to reclaim them, let the law step in.

TABLE III.—*Illustrating the Effect of sending 1, 2, or 3 Letter Cards to recall Absentee Patients for Treatment or for Wassermann Test.*

In the early part of 1920, 219 absentee cases were written for; of these:

			%
No. of absentees written for once	133		—
" " " " " " twice	46		—
" " " " " " thrice	40		—
	219	=	100
No. who attended on receipt of 1st letter card	96	=	43·9
" " " " " " 2nd "	20	=	9·1
" " " " " " 3rd "	3	=	1·4
Letter cards returned:	119	=	54·4
(*a*) Wrong address given when registering	18	=	8·2
(*b*) Removed from address given when registering	5	=	2·3
No. who ignored letter cards	77	=	35·1
	100	=	45·6

Summary and Conclusions.

1. An analysis of the attendances of 801 new cases of syphilis admitted to the Liverpool Royal Infirmary venereal clinic during one year beginning July 1st, 1918, demonstrated that the attendance of these patients was extremely unsatisfactory. Of new cases of primary and secondary syphilis 50 per cent. reached the end of their first course, 20 per cent. the end of their second course, and 14 per cent. the end of their third course. If this state of affairs were allowed to continue it would be a menace to the public health and a waste of the public money.

2. Apart from failure to attend through ignorance, callousness, and lack of financial interest in treatment, the effect of three factors upon attendance has been specially considered by statistical methods. (*a*) Fixity of abode: This has a moderate influence; for absenteeism of seafaring men and other "wanderers" was only about 10 per cent. to 20 per cent. greater than that of the "fixtures." (*b*) Severity of symptoms on admission: This has very little influence; for the absenteeism of patients with primary syphilis was only about 2–3 per cent. greater than that of those suffering from the constitutional symptoms of secondary syphilis. (*c*) Positive or negative Wassermann reaction: This has a great influence upon absenteeism; of 203 cases of latent syphilis the attendances during the first three months were roughly twice as good in those admitted with a positive Wassermann reaction as in those admitted with a negative reaction. Obviously great stress should be laid in the instruction to patients that a negative Wassermann reaction does not mean a cure.

3. The sending of letter cards is a partial but valuable remedy for absenteeism, resulting in the recall of half the absentees. Thus 19 absentees were written for, 43·9 per cent. attended on receipt of the first card, 9·1 per cent. on receipt of the second, but only 1·4 per cent. on receipt of the third. 8·2 per cent. gave the wrong address when registering.

I am indebted to Dr. Ernest Glynn, Professor of Pathology, to whom this investigation was indirectly due, for much helpful criticism; and to Mr. F. P. Wilson, surgeon in charge of the Venereal Department, Royal Infirmary, for allowing me free access to the records employed.

HOSPITAL SUNDAY FUND.—On July 28th at the Mansion House, the Council of the Hospital Sunday Fund met to make their awards for the year, Mr. R. Holland Martin occupying the chair. The Fund amounted to £101,920, and the Council decided to distribute £100,170 to hospitals and dispensaries, the chief awards being as follows: Charing Cross Hospital, £2460; Great Northern Central Hospital, £2545; Guy's Hospital, £4655; King's College Hospital, £4320; London Hospital, £12,300; Middlesex and Convalescent Home, £4130; Royal Free Hospital, £2735; St. George's Hospital, £3710; St. Mary's Hospital, £2715; St. Thomas's Hospital, £3520; University College Hospital, £2415; West London Hospital, £2200; Westminster Hospital, £2220. Several other institutions received sums of over £1000; the Fund was smaller by £10,000 than last year.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT NEWCASTLE-ON-TYNE.

SECTION OF MEDICINE.

WEDNESDAY, JULY 20TH.

THE first session was given up to a discussion on

Visceral Syphilis,

with especial reference to the cardio-vascular and central nervous systems.

Prof. THOMAS BEATTIE (Newcastle), the President, in his introductory remarks recalled the last discussion of this subject in 1893. In those days syphilis was largely untreated, and in this town—seaport, military depôt, and industrial centre—they saw a large number of cases. In the army a man with venereal disease was either in hospital or in the ranks; if he had syphilis he was only treated in hospital until the primary and secondary stages were passed. When he became a reservist the strain of physical labour, added to the imperfect treatment of his syphilis, led to the frequent development of aneurysm, general paralysis, tabes, transverse myelitis, and peripheral neuritis, and more rarely syphilitic disease of the pleura, lung, liver, and pancreas. At the present time syphilis is detected by the blood test in many cases in which it was not previously recognised because there was no history of previous disease. Modern treatment can eradicate the disease. In the future the incidence of these conditions will be diminished and fewer cases of visceral syphilis will be seen, as there is less chance of these complications occurring in treated cases.

Sir T. CLIFFORD ALLBUTT, who opened the discussion, first dealt with the histology of syphilis, insisting upon the importance of the vascular changes, which are strictly comparable in "primary" and "tertiary" lesions—the disease is a disseminate lymparteritis. The rapidity of generalisation of the virus via the lymphatics was emphasised—a syphilitic septicæmia is soon established, characterised by fever, rashes, and anæmia; some of the rapid deaths reported in early syphilis after the injection of salvarsan may be due rather to syphilitic than arsenical poisoning. He said that the disease when it attacks the arteries begins in the adventitia, and the change is quite different from that seen in athero-sclerosis. It arises in the aorta as a periaortitic lymparteritis, which tracks through to the intima, in which it may spread upwards or downwards to the aortic valve and coronary orifices. If a valve cusp is affected it may be severed from its attachment. Atheroma rarely ends in aortic regurgitation, syphilitic aortitis frequently does, and is often combined with coronary disease. In 70 per cent. of cases of syphilis microscopical examination shows that the aorta is affected, and it may be at a very early stage. Angina pectoris may be an early symptom of this involvement. Syphilitic disease of the ventricles is not common; there is no direct evidence of a diffuse fibrosis save as a consequence of coronary disease. Certain cases of pulmonary fibrosis and bronchiectasis may be syphilitic; a diffuse induration of the lung either at the root or at an apex may simulate pulmonary tuberculosis, and the two infections may exist together. Bronchitis in a syphilitic subject should be carefully watched; gumma of the lung is rare. Syphilitic lesions of the alimentary canal below the œsophagus are seldom met with except in the rectum. Gumma of the kidney is rare, and it is doubtful if there is a true syphilitic nephritis. The central nervous system may be infected very early in the disease, long before any clinical symptoms arise, and this especially in those cases which show little "secondary" manifestation. Here the essential change is also a panarteritis. The Wassermann reaction in the cerebro-spinal fluid may be positive while that in the blood is negative, and a positive test may be found in the cerebro-spinal fluid in the absence of symptoms. Sir Clifford Allbutt urged that lumbar puncture should be performed at every

stage of the disease, and, if necessary, treatment should be by intrathecal as well as intravenous injection.

In general paralysis the vessels are affected long before the appearance of symptoms. The nervous system is involved in 40 per cent. of congenital syphilitics, and signs usually appear before adolescence. In all diseases of the spinal cord the cerebro-spinal fluid should be tested for the Wassermann reaction. The speaker expressed the view that it is very likely syphilised arteries recover if treatment is begun early.

Discussion.

Prof. E. S. REYNOLDS (Manchester) approached the subject from the clinical standpoint, and commented on the protean character of the symptoms of visceral syphilis; in any condition which does not run a course typical of a recognised organic disease syphilis should be suspected. In a doubtful case examination of the eye and skin not infrequently reveals signs of old syphilitic disease. Syphilitic lesions are more often multiple than single. In the speaker's opinion the majority of cord diseases are not syphilitic. Too much reliance must not be placed on the Wassermann reaction; a positive result in the cerebro-spinal fluid does not necessarily mean nerve syphilis, and not 10 per cent. of all cases of syphilis develop either tabes or G.P.I. Spasticity is always very marked when it occurs in syphilitic disease. The chief syphilitic affections of the spinal cord are pachymeningitis, meningo-myelitis, acute myelitis, gumma, and Erb's spinal myelitis.

Dr. JOHN COWAN (Glasgow) showed lantern slides illustrating syphilitic disease of the heart and aorta. The diffuse myocardial fibrosis occurring in the early stages, gumma, diffuse fibrosis resulting from coronary disease, or the occlusion of a coronary orifice by syphilitic aortitis and early syphilitic disease of the aortic valve, are quite characteristic, but in many chronic diseases the cause is not recognisable. Any cardiac affection may be syphilitic in origin, he said, but its recognition in a particular case often depends on finding evidence of syphilitic infection, old or recent, in other organs. The Wassermann reaction is a good servant but a bad master, and should be used only as an aid to diagnosis. It is not a specific test from a serological point of view; a positive result is of value, but a negative is useless. Cardiac manifestations as a rule appear late, and only about 75 per cent. give a positive blood Wassermann. A case of aortic disease without mitral involvement arising in a patient between 30 and 50 years of age is most likely syphilitic, whereas aortic disease associated with a mitral lesion in a man between 20 and 40 years old is probably rheumatic. The majority of cases of heart block, myocardial disease and auricular fibrillation are not syphilitic in origin. Though too much must not be expected from anti-syphilitic treatment in cardio-vascular syphilitic disease, it is urgently required. Large doses of salvarsan are contra-indicated; moderate doses combined with long courses of mercury and iodide give the best results. No amount of treatment will remove thrombus from a vessel or restore dead tissue, but it is possible to improve the endarteritis.

Dr. A. G. GIBSON (Oxford) considered the diagnosis of syphilitic aortitis. Cases may be quite latent, an unsuspected patch being discovered post mortem. The "effort syndrome" may induce substernal pain and tenderness on pressure due to stretching of the aorta, an X-ray examination of which shows a wide shadow with an indefinite outline. Anginal pain may be due to coronary obstruction. Paroxysmal tachycardia may be the condition to attract attention. Aortic regurgitation is the best known sign and the easiest to recognise. Aortitis may cause a variety of abdominal symptoms, but in each group pain is induced when the blood pressure is raised, there is tenderness on deep pressure over the aorta and an increased width of shadow; the atheromatous aorta shows no such enlargement. Some cases do well on a solution of mercury and potassium iodide, and small doses of salvarsan repeated over a long period; salvarsan in ordinary doses is contra-indicated.

Dr. IVY MCKENZIE (Glasgow) stated that he had seen two cases of syphilitic nephritis amongst 1500 cases of syphilis during the last eight years. Both occurred during the "secondary" stage, and in each the albumin and blood cleared up with the disappearance of the rash. In the "outdoor treatment centre" vascular symptoms are rare, whilst nervous complications are relatively common—in the last 500 cases treated 40 returned with symptoms referable to the nervous system. He related a case which post mortem showed gummatous infiltration of the right ventricle, death having taken place six weeks after the onset of symptoms. He considers angina is due to aortic disease irritating the vagus and sympathetic nerve endings in the arterial wall.

Dr. ISAAC HARRIS (Liverpool) showed electrocardiograms from two cases of syphilitic myocarditis. In the case of a man aged 41, who was admitted to hospital with symptoms suggestive of gastric ulcer, the electrocardiograph revealed a want of conduction in the right branch of the bundle of His. His blood Wassermann was positive, and there was a history of syphilis contracted 20 years previously. Potassium iodide removed his symptoms and restored the cardiograph to normal in three weeks. He maintains that syphilitic and non-syphilitic disease of the heart may give rise to the same symptoms and signs, that iodide is very effective in localised disease of the myocardium, but mercury is more efficacious in generalised arterial disease.

Dr. JOHN EASON (Edinburgh) dealt with the anæmias of syphilis. The blood picture of "pernicious anæmia" was found in an infant 14 months of age, whose blood Wassermann was positive; the mother's serum also gave a positive reaction. He advocated the Wassermann test in all cases of anæmia in infancy both on the mother and the child. The blood picture of "pernicious anæmia" may also occur in the "secondary stage" of the acquired disease. He quoted three cases seen during the war, two of which recovered completely; in the fatal case, a man aged 36, mercury was of no benefit in treatment, and at the post-mortem the liver contained no free iron and no spirochætes were found in the spleen or bone-marrow. In the "tertiary stage" an anæmia with enlarged spleen simulating Banti's disease may occur. In one case resembling "pernicious anæmia" hæmosiderin was found in the liver and spleen.

Sir CLIFFORD ALLBUTT, in reply, briefly referred to angina pectoris. It is a very important symptom of aortitis, he said, whether syphilitic or not, and indicates disease of the tunica adventitia. The pain is often very trifling, and may be only a sense of oppression across the upper chest, with or without pain referred down the arm.

THURSDAY, JULY 21ST.

Asthma and Allied Conditions.

The opening paper was read by Sir HUMPHRY ROLLESTON, who stated that the diseases in the group of "toxic idiopathies" are hay fever, asthma, urticaria, angio-neurotic œdema, Henoch's purpura (or purpura with abdominal symptoms), eczema, and some other forms of acute dermatitis, some cases of acute gastro-intestinal disturbance, and some forms of croup. Doubtful examples are migraine, epilepsy, cyclic vomiting, and possibly gout. The various theories as to the causation of asthma were passed in review, and the evidence in favour of these diseases being anaphylactic phenomena considered; when this subject was discussed at the Birmingham meeting ten years ago the accepted view was that asthma was a "reflex neurosis," only the opener of the debate, the late Dr. G. A. Gibson, suggesting that "modern theories of anaphylaxis may in the future aid us in our understanding."

Do we now attach too much importance to hypersensitiveness in asthma to the neglect of a reflex side? In discussing ætiology, the predisposing factor of heredity was emphasised; with a strong family history a sensitiveness to several different proteins often appears. Whether hypersensitiveness may be

acquired, or whether its appearance for the first time in adult life is merely a "delayed action," was considered; constant contact, as in bakers with flour proteins, does appear to induce hypersensitiveness, but it is improbable that the condition arises de novo from absorption of foreign protein via the subcutaneous tissues or a damaged mucous membrane. Hypersensitiveness may first appear after an acute infection, and serum sickness may occur only in patients who have a transmitted natural hypersensitiveness to horse serum. Asthma begins in the majority of cases before the age of 45; sensitiveness to some protein is more likely to be revealed by a positive skin test in cases arising in the young than in later life, and when the attacks begin in infancy multiple sensitisation, particularly to food proteins, is not infrequent. The value of positive skin tests in the diagnosis of hypersensitiveness to protein is shown by the success of treatment—desensitisation by injection of the offending protein, avoidance of a food protein, or vaccines—based on the information thus provided. What significance should be attached to a negative reaction when symptoms suggest a specific sensitisation? The known forms of protein causing hypersensitiveness are very numerous—130 are employed at the New York Hospital, and there are probably still many unrecognised. In some cases giving a negative skin test bacteria play a prominent part.

The importance of prophylaxis and treatment by specific desensitisation by the hypodermic or oral administration of the offending protein was considered; a proportion of cases is improved by autogenous vaccine prepared from the sputum. The importance of the elimination of all septic foci was insisted on. On non-specific lines treatment by intramuscular or intravenous injection of peptone was referred to, and finally treatment by drugs.

Discussion.

Dr. JOHN FREEMAN (London) maintained that asthma is a product of hypersensitiveness and a nervous reflex; foreign protein is but one link in the chain. In hay fever the protein factor is the more important, but some nervous reflex is often the immediate exciting cause. An attack may be induced in susceptible persons by suggestion, bad news, strong light, emotion, &c. Reflex, protein, hereditary taint are all factors, and there are probably others. Bronchial asthma is in the same category as other "toxic idiopathies." Asthma and hay fever tend to run in families, but a summation of stimuli is sometimes required to induce an attack—e.g., horse asthma and hay fever may be combined—and such a patient only has asthma during the pollen season if he approaches a horse. The skin reaction given by grass pollens is enormously greater than the food protein skin tests. Infections play a very important part in the production of asthma, the focus may be anywhere in the body, and the exciting protein may be the bacterium, its toxin, or derived from tissue destruction. In testing the skin reactions it is found that the pollen of each kind of flower is different, whereas that of grass is common to all. Dr. Freeman described the technique of the skin reaction, and demonstrated various proteins dried on filter paper. In performing the test a small abrasion of the skin is produced as in Jennerian vaccination, the skin wetted with saline or weak alkali, and the protein-containing filter paper applied for 15 minutes.

At a later stage of the discussion, at the request of the PRESIDENT, Dr. Freeman added that he considered the ophthalmo-reaction to be very valuable as a means of detecting hay fever cases. There is no sensitiveness to grass pollen unless the patient gives a positive skin or conjunctival reaction. In treatment the dose of pollen injected must be cut down during the season.

Dr. MACKENZIE WALLIS (London) had found that a patient with intermittent hydrarthrosis and psoriasis which showed a definite periodicity was sensitive to her own synovial fluid. The fact that many cases of asthma showed a definite periodicity induced him to investigate the disease on similar lines. A case of periodic tobacco-smoke sensitiveness was described, and one due to egg albumin, in which an attack was induced by the application to the hands of an egg-containing embrocation. He had tested the skin reaction of 500 cases of asthma. About 40 per cent. show a positive reaction; the majority react to the pollens, followed by meat and fish proteins. A positive protein skin test is obtained in some cases of epilepsy—one case was mentioned in which a patient had a fit after eating white of egg in confectionery. The proteins for test purposes do not keep well in solution. In patients sensitive to food protein the omission of the offending article from the diet was the best treatment.

Mr. FRANK COKE (London) considered asthma an anaphylactic phenomenon. Many gastro-intestinal symptoms unsuccessfully treated by surgery are in reality due to hypersensitiveness to food proteins, and illustrative cases were quoted. It is possible the symptoms are due to shock produced by protein split products; histamine shock is very like anaphylactic, and the symptoms of anaphylactic and histamine shock vary in different animals. It may be that histamine is concerned in the production of asthma, and he would say that asthma is the result of poisoning by protein or protein derivatives. A short course of some food may be a cause of sensitisation to it; prolonged contact is another—e.g., bakers to flour—asthma in such cases may be due to the action of a specific ferment elaborated by the organism as a defence against the particular foreign protein.

Dr. A. E. GOW (London) stated the majority of patients with bronchial asthma that he had tested gave a positive intradermal test with Witte peptone, but not all individuals in whom the test is positive are asthmatic. While the best results of peptone treatment are obtained in those cases which do show a well-marked intradermal reaction, some of the others may be benefited; the stronger the reaction the smaller should be the initial dose for intravenous injection. Some cases of asthma and hay fever are extremely sensitive to intravenous injection of Witte peptone; transient urticaria and angioneurotic œdema occasionally follow. Peptone to many of these "toxic idiopathies" is a dangerous drug, it should not be given during a paroxysm, and its indiscriminate use is likely to bring discredit on what is, in certain cases, a valuable remedy.

At a later stage in the discussion Dr. Gow, at the PRESIDENT'S request, replied to certain questions raised relative to peptone therapy, and outlined a course of treatment.

Dr. JOHN F. WALKER (Southend-on-Sea) expressed the opinion that information obtained by general practitioners in these conditions should be collected in some way for examination by experts.

Dr. WARREN CROWE, Dr. JAMES CHALMERS, Dr. JOHN STENHOUSE (Toronto), Dr. D. G. HAMILTON, and Dr. GREENFIELD also spoke before Sir HUMPHRY ROLLESTON replied.

In the afternoon a demonstration of the Skin Tests in Asthma was given by Dr. MACKENZIE WALLIS in the Pathological Department.

FRIDAY, JULY 22ND.

Encephalitis Lethargica.

A joint discussion with the Section of Pathology and Bacteriology occupied the first part of the third session. Lord DAWSON OF PENN presided.

Dr. EDWIN BRAMWELL (Edinburgh), in the opening paper, gave a brief summary of the present state of knowledge of the condition. It was a disease new to living man, with widespread incidence and serious mortality. As the lesion is not confined to the brain, and lethargy is not a constant symptom, the nomenclature was criticised, but there seemed to be grave objections to "epidemic encephalitis." The onset varies; more commonly it is gradual with well-marked prodromal symptoms, less frequently is it abrupt. Common prodromata are lethargy, drowsiness, headache, tremors, diplopia, insomnia, difficulty in

micturition; muscular pains may be very misleading. One man had severe pain in the hand for four days, and a week later typical symptoms developed. The onset may simulate apoplexy. Few diseases have such a variety of symptoms; some only are of value in differential diagnosis. It is an infective process with the symptoms of such, but in addition there are those referable to infiltration of the central nervous system with lymphocytes, the perivascular dilatation, œdema, neuroglial proliferation and infarction. These pathological changes are situate more especially in the mid-brain, extending into the crura or pons, and often to a wider area, including the cord. All ages and both sexes are attacked, but especially middle-aged adults in the colder months of the year when influenza is common. There are very few instances of contagion. The disease has been produced experimentally and transmitted in rabbits and monkeys. The organism, which probably resembles that of poliomyelitis, has been cultivated. There is no direct relationship between acute poliomyelitis and encephalitis lethargica, but the question of the connexion, if any, between influenza and lethargic encephalitis is undecided.

The laboratory is at present of little help in diagnosis. The type of the disease seen in 1918 having altered considerably, the French symptom-complex of lethargy, fever, and ocular paralysis is seldom seen now. In diagnosis the following points should be considered: mode of onset, presence of prodromal symptoms, and fever. Of special symptoms the most important are ophthalmoplegia of central origin and acute onset, which may appear when the acute stage of the disease is passed; diplopia lasting a few days only is seldom met with in other conditions; nystagmus, varying in amplitude and rapidity, and not necessarily occurring in the direction in which the eyes are moved; blurring of vision, due to paralysis of accommodation; conjugate paralysis of upward movement of the eyes; lethargy or drowsiness; the mask-like face is only seen in this disease and in paralysis agitans; Korsakow's psychosis may be met with and various forms of involuntary muscular movement. In treatment very little advance has been made. Netter's method of producing a fixation abscess with turpentine has sometimes a striking result.

Dr. DA FANO (London) showed lantern-slides illustrating granules surrounded by a halo in nerve cells which he and Dr. Helen Ingleby have described in the central nervous system in fatal cases of the disease. The occurrence of these haloed granules has been confirmed by Dr. Bernard Shaw, and similar bodies have been found in rabies—a disease in some respects resembling encephalitis lethargica. He referred to a correspondence with Dr. A. H. Booth, of Victoria, who has seen actively motile granules in the blood and gland juices in cases of encephalitis lethargica, but Dr. Da Fano had been unable to stain these bodies in slides submitted for the purpose. Details of an acute case of encephalitis which died in three days, diagnosed during life as cerebral hæmorrhage, were given.

Dr. C. H. MELLAND (Manchester) said encephalitis lethargica was not the cerebral type of poliomyelitis, though the two infections were probably closely related. The majority of cases not being lethargic now he suggested "epidemic encephalitis" as a better name, or on account of the protean nature of the symptoms "encephalitis polymorphica." The study of the epidemiology of the disease is very imperfect, as many of the slighter cases are not recognised, and it is possible that these mild cases play an important part in the spread of infection. They show very few symptoms, and lethargy is as a rule conspicuous by its absence. He related a series of cases in which the first diagnosis proved incorrect—a woman of 26 whose illness began suddenly with ptosis and vertigo and drowsiness. She was thought at first to be syphilitic. One year later slight weakness of the internal recti alone remained. In a young boy whose illness began with severe headache a diagnosis of typhoid fever was suggested. He developed paralysis of the internal recti and double optic neuritis, it was three months before there was any improvemen in the paralysis or neuritis, and a boy of 16 whose illness began with headache and weakness of the legs walked with a limp three months later. The importance of minor symptoms was insisted on, and a series of slight cases of the disease was briefly referred to.

At the termination of Dr. Melland's remarks Lord DAWSON declared the discussion closed, and the consideration of Renal Efficiency Tests (see report of Section of Pathology and Bacteriology) was proceeded with.

SECTION OF SURGERY.

WEDNESDAY, JULY 20TH.

This section, over which Prof. RUTHERFORD MORISON presided, opened with a discussion on

Acute Pleural Empyema.

Mr. HENRY WADE (Edinburgh), in introducing the discussion, said that so great was the incidence of this condition, and so wide was the experience in its treatment, that our practice was tending to become standardised; nevertheless, he felt confident that many new lines of thought might be brought up at that meeting.

In dealing with the pathology of acute pleural empyema, there were two factors to be considered—viz., "the seed and the soil." The commoner infecting organisms were the pneumococcus and the streptococci, and there were three paths of infection: (1) the blood stream; (2) the lymph stream; (3) direct extension. In his opinion by far the commonest of the three was the direct mass infection from a focus in the lung spreading outwards till it lay beneath the visceral layer of the pleura. He considered that in this respect the process was exactly similar to the mode of causation of peritonitis following acute appendicitis. If the condition was untreated, a natural cure might result by the localisation of the infection by pleural adhesions, and the dissection of the pus either outwards toward the skin, inwards toward the bronchi, downwards through the diaphragm, and the eventual spontaneous evacuation of the pus either through the skin of the chest wall, through a bronchus, or through the skin at a greater distance—e.g., as a psoas abscess. There was another rarer result—viz., calcification may occur in the empyema cavity, giving rise to a large calcareous plate beneath the ribs.

But inasmuch as the patient is only too frequently overwhelmed by toxæmia before such a natural cure, and because such a cure takes a long time, leaving, perhaps, endless troublesome complications in its train, we find abundant justification for surgical intervention in every case. In the past the usual procedure, notwithstanding local differences in technique, has been incision and drainage, but Mr. Wade was not satisfied with the present technique, which he considers has the following dangers: (1) the operative danger, which is largely an anæsthetic risk; (2) the dressing danger, which is that of mixing the infection; (3) the convalescent home danger, which is the failure to obtain full expansion of the lung.

In thinking over the subject in the search for an ideal operative technique, he was led to compare the treatment of acute infective processes in two serous and one synovial cavity—viz., the peritoneum, the pleura, and the knee-joint. He considered that the analogy between the three was so striking that the principles of treatment for the peritoneum and the knee-joint should be applicable to the pleura also. During recent years there has been a revolution in the treatment of sepsis. He would point two examples of this:—

A.—*The peritoneum.*—The following are the phases through which technique had passed: (1) the use of strong antiseptics to destroy the infection; (2) flushing out the whole cavity with saline; (3) gentle clearing up of infected material, with multiple tubes; (4) the removal of the primary focus, with drainage by one tube or possibly without drainage at all. This evolution in treatment has been brought about by three factors. In the first place, the clinical surgeon

has realised by operative experience that the primary focus is the acute appendicitis, the acute cholecystitis or ruptured ulcer, &c., and has impressed upon the general practitioner the importance of early treatment. Secondly, the pathologist has clearly shown that the adhesions are defensive in nature, and that to break them down and irrigate the whole cavity is not only of no value, but of great danger. Lastly, a cytological examination has been of great assistance both in diagnosis and prognosis: for in his opinion the only true guide to a knowledge of the patient's reaction to the infection is the number of the large mononuclear leucocytes.

B.—*The knee-joint.*—In the same way the treatment of joint infections went through the following phases during the war: (1) the use of powerful antiseptics, which led to amputation; (2) the use of saline dressings on an open joint, which had the same ending; (3) drainage-tubes, which inevitably led to disaster; (4) excision of damaged tissues; (5) lastly, opening, evacuating, and immediate closing of the joint.

Mr. Wade, bearing in mind the close analogy between the peritoneum and the knee and the pleura, has modelled his treatment of acute pleural empyema on the same lines. He recommended that the pleura should be freely opened, all pus evacuated, care being taken that all loculations were broken down, and then the wound closed as early as possible. The opening in the pleura was a matter of some controversy as physiologists condemned the wide openings as practised during the war. Personally he made an opening just large enough to permit of a thorough examination of the cavity, and so planned that it would fall together when the tube was removed. He used a short tube and led away the discharge into a receptacle containing a disinfectant, but he took out his tube as early as possible, usually at the end of 48 hours. He realised that some cases could be aspirated satisfactorily, but the value of aspiration needed thoroughly reviewing. He also thought that the value of disinfection of the cavity should be fully tested. But he was convinced that the method he had suggested was the most satisfactory. The technique was exactly as laid down by Prof. Rutherford Morison during the war and could be summed up as (1) opening; (2) drainage; (3) early closure.

Discussion.

Colonel A. FULLERTON (Belfast) said that he and his colleagues in France would have agreed most heartily with Mr. Wade. He laid stress on the danger of drainage-tubes which, while allowing the escape of septic material, invariably introduced other organisms. It was due to this that so many knee cases were lost in the early part of the war. In gunshot wounds of the chest, he opened the pleural cavity, removed the foreign body, and closed the chest. If infection followed, he gave a fair trial to aspiration, which in many cases was successful; but if it failed then the chest had to be opened, disinfected with bipp or flavine, and then drained, but he dispensed with the tube as early as possible.

Mr. T. P. DUNHILL (London) raised three small points: 1. The possibility of immediate suture was always to be borne in mind. He evacuated the contents of the cavity not by swabbing, but by means of a Sprengel's suction pump, which he considered much more efficient. His cases in France usually healed after removal of the foreign body and primary suture, but he pointed out that, when aspiration was necessary, it should be done every day. 2. Some cases in hospital practice were of a doubtful diagnosis, in which pus was suspected, but not found with a needle. Here he strongly recommended an exploration of the pleural cavity just as one did an exploratory laparotomy. The chest should be carefully explored, and it was surprising how often pus was found in quite unexpected places—e.g., around the apex of the lung instead of at the base as had been diagnosed. 3. He considered that the most valuable anæsthetic was intratracheal ether, except in the most acute cases.

Mr. PURVIS said that his experience of wounds of the knee-joint in the East, which had been treated by the Rutherford Morison technique, was so uniformly good that he felt convinced that the application of the same principles to the chest could only have the most brilliant results.

Mr. G. H. EDINGTON (Glasgow) remarked that he would have been glad to have had more data concerning the infecting organism, because in his opinion the course of the case varied with the nature of the infection, those due to the pneumococcus clearing up the most rapidly. Again, those cases in which thick pus and fibrinous masses were present were of much better prognosis than those having thin watery fluid. He never had used antiseptics, but always drained; and in his opinion drainage-tubes were not the bogey that they are made out. He retained his tubes for 14 days, cut them flush with the skin, and strongly deprecated the use of tubing draining into a bottle. He did not agree to the analogy between the pleura and the peritoneum, for in the latter the contents were adaptable to the local condition, but in the chest only the lung was adaptable.

Mr. JAMES BERRY (London) raised two points of practical importance: 1. The technique in dealing with very ill patients with large collections. He had seen cases die because of movement during the anæsthetic. The patient was so placed that the affected side projected over the side of the table, and he operated from below. 2. After-treatment. He always covered over the whole wound with oiled silk, which acted in a valvular manner, and allowed discharges to be expelled during inspiration, but sealed the wound in expiration.

Mr. F. C. PYBUS (Newcastle) had been impressed by the high mortality in children, and advised the following steps in the treatment—viz., early diagnosis, large incisions with flavine irrigations, very careful examination of chest each day, much earlier treatment to expand the lung. For this condition he urged getting the children up sooner and letting them run about. He mentioned a recent communication from America, in which puncture and Carrel-Dakin irrigation had reduced the mortality to 2 per cent. He maintained that thoracotomy was much more dangerous than a laparotomy.

Mr. A. LUCAS (Birmingham) thought that treatment and prognosis largely depended upon the infecting organisms. He advised aspiration when possible, otherwise incision, but he objected to tubes. He used a local anæsthesia, and got his patient up early.

Mr. C. P. CHILDE (Southsea) mentioned a case in which the condition persisted because of a tube which had fallen into the chest.

Mr. H. S. SOUTTAR (London) insisted that attention to small details was of greatest importance. In reality these cases were favourable for treatment and he advised: (1) Patient to be placed in position before starting and not moved afterwards; (2) regional anæsthesia; (3) patient to be on the face almost in the supine position; (4) incision not far back, but its centre to be in the mid-axillary line; (5) drainage quite unnecessary; (6) incision will close, being a valvular one.

Prof. MORISON congratulated Mr. Wade on his paper, and was delighted at the comparison drawn between the peritoneum, pleura, and joints. It was one which he frequently made, but had not heard any speaker take such a line before.

Sir WILLIAM MACEWEN, Mr. A. M. MARTIN, Mr. W. J. HADLEY, Mr. MCADAM ECCLES, Mr. C. F. CUTHBERT, Colonel CONNOR, Mr. W. S. DICKIE, and Mr. A. COOKE also contributed to the discussion.

Mr. WADE, in reply, said that Mr. Berry and Mr. Souttar had taught him a great deal. He did not agree that the outlook of a case depended upon the nature of the infecting organism. The feature of the greatest import was the nature of the reaction of the soil to the seed. If a blood film showed that the organisms were being infested by the polymorphonuclear leucocytes and they in their turn were being destroyed by an excess of large mononuclear leucocytes, then

the prognosis was good. He was glad to note that the general trend of opinion was toward early closure.

Method of Approach in Appendicitis.

Sir HAMILTON BALLANCE (Norwich) read a paper on the best method of approach in cases of acute appendicitis. The method described was used in those cases where the diagnosis was clear, for if there was any doubt a mid-line subumbilical incision was imperative. He considered that there were the following fundamental factors to be observed: (1) The shortest possible route must be ensured; (2) fullest possible view to be obtained; (3) surrounding viscera to be disturbed as little as possible; (4) removal of appendix in every case with very few exceptions. He showed a series of slides illustrating the steps of the operation which were as follows: (*a*) skin incision, well outside rectus, parallel to Poupart's ligament; (*b*) division of external oblique, half muscle and half aponeurosis; (*c*) division (in line of incision) through internal oblique and transversalis; (*d*) division of peritoneum; (*e*) search for appendix to inner side of cæcum, then to outer side, and then behind; (*f*) pelvis always explored for pus. He claimed that the pelvis could be easily drained through such an incision, and that he did not find ventral herniæ resulting.

In the discussion which followed Mr. HAMILTON RUSSELL, Mr. RUSSELL COOMBS, Mr. E. W. G. MASTERMAN, Mr. SOUTTAR, Mr. MCADAM ECCLES, and Mr. MAMOURIAN spoke, and in nearly every case disagreed on the grounds that the incision would weaken the abdominal wall and herniæ result.

Sir HAMILTON BALLANCE, in reply, said that even if ventral herniæ should follow they were very easily closed.

Intussusception.

Mr. EDINGTON submitted an analysis of cases of intussusception under his care during the years 1908–14:—

Sex.

Male, 27. Female, 8. (Male 77 per cent.)

Age.

Under 1 year ..	24	4 to 5 years ..	1
1 to 2 years ..	5	10 years	2
2 to 3 years ..	1	70 years	1
3 to 4 years ..	1		

Types.

Ileo-cæcal ..	7	Colic	5
Cæcal	6	Ileo-colic	4

Combined.

Ileo-colic Ileo-cæcal	3	Enteric Ileo-colic	3	Enteric Ileo-colic Ileo-cæcal	3

Gangrene .. 6.

Ætiology.

Meckel's diverticulum	2	Mobile colon ..	2
Enlarged glands ..	4	Nothing abnormal ..	27

Results.

Recoveries, 21 = 60 per cent. Death, 14 = 40 per cent.

Prognosis.

Enteric far the worst.

THURSDAY, JULY 21ST.

Mr. A. M. MARTIN (Newcastle) was in the chair, when a discussion on

Compound Fracture of the Thigh and Leg

was opened by Mr. NAUGHTON DUNN (Birmingham), who reviewed the treatment of compound fracture of the femur before the war. He recalled the gradual adoption of operative treatment in place of manipulation and splintage. The commission instituted by the British Medical Association before the war laid down as one of its findings that operation afforded the best means of obtaining a perfect functional result. The war soon caused an alteration of opinion, largely because of the gross sepsis present in war wounds. Many types of old splints were tried and many condemned, and it was left to the Thomas knee-splint to dominate the whole situation. It became installed as a part of the medical equipment of the most forward units, and its use saved many a life from shock. He quoted a series of 500 cases of fractured femur in his experience, of which only 11 cases had as much as half an inch shortening, and these were considered a disgrace.

Now the results of compound fracture were: (1) shock; (2) infection; (3) want of primary union; (4) secondary bone infection.

Bearing in mind these results, he had laid down regulations for the treatment of compound fractures as follows:—

1. Immediate fixation in a Thomas splint, as in the war.

2. Suspension of the splint in transport.

3. Treat shock, which according to Gray was aggravated by hæmorrhage, cold and pain, loss of fluids, particularly alkaline ones. He always used intravenous gum acacia or blood transfusions in all cases in which the blood pressure had fallen below 85 mm. For acidosis, alkalies intravenously and by mouth.

4. Operative treatment. Under gas and oxygen anæsthesia he opened up the wound, excised all damaged tissues, and closed with drainage wherever possible. If badly infected he left wide open and did a secondary suture later. He then set the fracture, ensuring correct alignment, immobility, and lack of compression of the limb.

He maintained that all these factors were fulfilled by using a Thomas knee-splint for all fractures of the femur excepting those in the upper third. These resulted in flexion and abduction of the upper fragment, and should be treated in a Robert Jones abduction frame or in a Sinclair net-bed.

In fractures of the shaft he pointed out that the position of deformity likely to occur was outward angulation and sagging at the site of fracture, and internal rotation of the lower fragment. He avoided these by putting up in a Thomas splint bent to 160°, with extension, the foot being held in a Sinclair foot-piece fixed on with glue. He suspended the splint by a weight and pulley to a Balkan frame. He advised early movement at the knee-joint with frequent X ray examinations. Usually union was sound by the tenth week and massage could be started, and then he got them up in a caliper splint, but he did not allow the bone to take the weight until X rays showed trabeculation of the new bone at the seat of fracture.

Fracture of the Tibia and Fibula.

Mr. Dunn said that in these cases the deformity was a valgus one, combined with failure of restoration of the normal tibial curve leading to flat-foot and genu recurvatum. If the fracture was of such a nature that it could not be replaced, and especially if there was a fracture involving a joint, operation must be undertaken. Other complications which might occur were limitation of movement due either to extra-articular fibrous changes or intra-articular adhesions. All these troubles may be avoided by early fixation in a Thomas knee-splint with early elimination of sepsis. In addition, a flexion frame must be fixed to the splint to allow of a range of movement in the knee. If stiffness occurred he insisted that graduated splintage was far superior to forcing rapid movements, and he emphasised the teaching of Sir Robert Jones—viz., that if ankylosis is inevitable each joint has its most favourable position.

In dealing with the sequelæ of these compound fractures of the lower extremity, he pointed out that the persistent sinus may be the most troublesome. These were due to: (1) the retention of a foreign body; (2) a septic bone cavity; (3) potential sequestrum not yet separated.

In these cases it was most difficult to decide the most favourable time for interference. He personally considered that it was essential that the patient should be in good general health, have no local reaction, no temperature, and no history of a severe reaction after previous operations. Even then he gave a prophylactic dose of sensitised streptococcal vaccine. He then proceeded to define the extent of the septic

cavity, and to do so took two X rays, one before and one after the injection of bipp under pressure. He showed lantern slides to demonstrate how far the lesions in the soft parts might extend, and he insisted that the removal of the whole septic tract was essential to the success of the operation. The steps in his operative procedure included: (1) excision of the sinus and tracts in soft tissues; (2) free subperiosteal exposure; (3) location of the bone cavity and converting it into a groove; (4) treatment of this bony groove with spirit and bipp; (5) soft tissues allowed to fall in and wound sutured up.

Discussion.

Mr. A. H. TUBBY (London) said that his war experience was confined to base hospitals, and he must admit to having had considerable difficulties with these fractures. Taken all round, the Thomas knee-splint was not favourable for all cases, the great drawback being that so much education in its application was needed before it was properly handled. They had favoured the Hey Groves technique, and had very good results. He had been much struck by the amount of traction necessary for the lower limb, and how well the limb stood it. Ten pounds had been used at the beginning and later 30–40 lb. Sinclair's glue was the best adhesive, and calipers were most useful in difficult cases. He had started using calipers with the gravest apprehension, but had been converted.

Mr. HAMILTON RUSSELL (Melbourne) remarked that the aspects of the case were so many, and that he would later deal with the mechanics of extension; therefore he would confine his remarks to the soft tissues. He agreed with Mr. Tubby's remarks on the Thomas splint, except that it was invaluable for transport. But did not share his liking for Hey Groves's work, and would particularly condemn calipers; and further he considered such heavy weights as quite unnecessary. He felt that we needed great discrimination in dealing with war experience and its lessons, especially with regard to adopting them into civil practice. The point of most vital importance was to avoid further damage to the tissues or weakening the natural resistance of the patient. For these reasons he deprecated the use of strong antiseptics.

Mr. MAX PAGE (London) would insist on the adoption of the new nomenclature—viz., "open fractures," not "compound fractures." He recognised three distinct cases of open fracture: (1) direct, in which the skin, muscle, and bone are all damaged at the site of injury; (2) indirect, in which the sharp fragments pierce the skin; (3) secondary, where skin sloughs over a fracture. He maintained that contamination and treatment varied widely in each. In the direct variety the infection was marked and liable to become a fulminating one, and in these cases it was necessary to excise the whole wound tract, including the infected bone ends. This was not always practicable because of shortening and the presence of main vessels and nerves in the wound. In the indirect variety the infection was superficial and the deep structures could only be infected by reposition of the bones. These cases should be fixed on a splint exactly as they were, until operation could be undertaken. Then the skin should be thoroughly cleansed, the protruding bone cleanly sawn off, fracture reduced, wound excised, and wound sewn up. He also added that primary amputation must always be considered in all direct fractures, and that internal splinting in these cases was undesirable. Tourniquets were condemned. He advocated much earlier physio-therapy than Mr. Dunn. Calipers and transfixion called for great care, and he considered that bad fractures of the tibia were most suitably dealt with in a plaster case with convenient interruptions.

Mr. WADE said that they were attempting to establish a routine for all these fractures—viz., immediate fixation in a Thomas splint without a tourniquet. The administration of anti-tetanic serum depended entirely upon the district the accident occurred in. He regarded splints as an occasional unfortunate necessity preferring support of the limb on pillows with a direct weight extension, with counter extension by the body weight. Massage and movement were of the utmost importance.

Mr. EDINGTON operated in every case, cleaned up the limb, irrigated the wound with carbolic lotion, and did not excise the wound. He used a half-box wooden splint for the tibial fractures. If results were not satisfactory in a week he never hesitated to use a plate, which he removed after four weeks. He disliked transfixion pins.

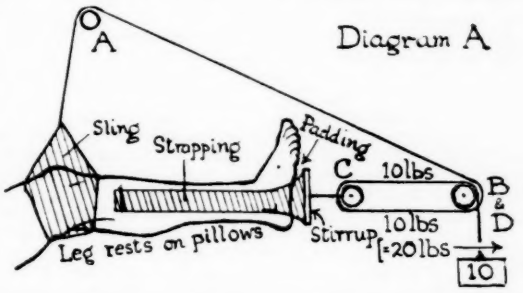
Colonel FULLERTON had seen so much of Major Sinclair's work that he was entirely convinced of its efficacy. He had difficulty with both glue and adhesive plaster, and had never hesitated to use calipers or pins, and as he had not seen injury to result from extension through the ligaments of the knee-joint, he put his calipers into the head of the tibia. Patients who had had glue and plaster and calipers unanimously preferred the last. He thought excision of wounds had come to stay, but he did not use antiseptics.

Prof. MORISON insisted on every case being opened up, and in support quoted a case of his own. A sergeant was admitted with a clean in-and-out bullet wound of the thigh with a fractured femur. The wounds were scabbed over, the temperature was normal, and the man felt fit. For ten days this continued, and on the eleventh he had a rigor and nearly died from acute osteitis of the femur.

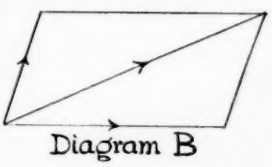
Mr. RUSSELL then read his paper on the closely allied subject of

Theory and Method in Extension of the Thigh.

The speaker said that his interest in this subject was brought about years ago by seeing the son of a great friend, who had had a fractured femur, well treated by a practitioner. In spite of this the boy, after ten weeks, had non-union and 3½ inches of shortening. Why was there this shortening? He explained that shortening of the limb in fractures of the femur was due to the tone of the long muscles going from the pelvis to the upper end of the tibia. This tone or "physiological stretch," was maintained by the femur, and when once it was broken shortening occurred and, moreover, became progressive as time went on. Our aim, therefore, should be to pull out these muscles to their normal length. This was quite



easy but for two factors: (1) active muscular contraction, due to fear, pain, &c; (2) weight of the limb and gravity. He had therefore devised a method of extension which, in his opinion, gave perfect results. It avoided splints and was most convenient for nursing purposes, and was absolutely comfortable for the patient.



The procedure was as follows: A wide sling is placed around the knee, and a strapping extension placed on the leg (not the thigh) ending in a stirrup, the cord of which is attached to pulley C (see diagram A). A cord attached to the knee-sling passes to a Balkan

frame over pulley A then down to pulley B, thence to C, back to D, and thence over the bed-end to the weight (B and D are pulleys on the same axle-pin). The foot end is blocked up, and the leg rests in pillows.

Pulley A is attached to the crossbar of the Balkan, and B and D to the upright. Diagram B shows the lines of forces acting in a parallelogram, the resulting force being in the direction of the femur (the longitudinal force being twice that of the uplift).

Mr. Russell claimed that perfect alignment was obtained and maintained, however much the patient moved. So convincing was it, that if at the end of 24 hours the shortening had not been overcome, he was very much on the "qui vive," and any imperfection in position after 48 hours was an absolute indication for operation. He believed the Thomas knee-splint to be invaluable for transportation, but once the patient was in bed, it was unsound in principle, lacking in comfort, and unsuccessful in functional results. He showed conclusively that there is no injury to the ligaments of the knee-joint in extension via the tibia, for the extension does not affect them but only the long muscles reaching from tibia to pelvis. Heavy weights were not necessary, a fact proved by the fractures of the humerus, in which the weight of the forearm, &c., was more than sufficient, and if uncontrolled would cause appreciable separation of the fragments.

Sir HAMILTON BALLANCE thought the idea an excellent one, but personally favoured the Thomas splint; but he was of opinion that the factor of the greatest importance was the extension; the splint was of little import. He was in agreement with Mr. Russell that extension through the knee-joint had no deleterious influence on the joint structures. The amount of extension was greater in civil work than military because of the destruction of muscle in the latter. He used 15 lb. in wounds, 20–25 lb. in civil cases, and he preferred weight extension to fixed extension, and his experience of glue was unsatisfactory, owing to skin irritation. Calipers were efficient but quite unnecessary in civil practice.

Mr. ECCLES called for a definite ruling on the treatment of open fractures and on the value of antiseptics. He asked how Mr. Russell prevented external rotation of the lower fragment, and if he had any pressure complications from the sling.

Mr. DUNN, in reply, said that he was encouraged by the large majority in favour of the Thomas splint. He disagreed with Mr. Tubby, whose cases might have left Egypt in a satisfactory condition, but they did not stand transportation well. He personally found no difference between fixed and weight extensions.

Mr. RUSSELL, in reply, could not agree to the use of splints. With his apparatus nursing was easier than with a Thomas splint. External rotation was perfectly controlled. He quoted a case of his own with both femora fractured and treated by his method, which was up in ten weeks, away to convalescent home 12 weeks, rejoined at end of fourth month, and went through three more years of active service. The Thomas splint may be good for fractured tibiæ, but for the femur it was unsound in principle, as it added weight to the limb and depended for its efficiency upon pressure on the tuber ischii, and, therefore, if efficient, it was uncomfortable, and if comfortable it was inefficient.

The Bone Graft.

Mr. MARCUS MAMOURIAN (Ashton-under Lyne) read a short paper on bone-grafting. He said that although bone-grafting was now recognised as a most important advance in surgery, yet the fate of the graft was unknown or disputed. Ollier and Macewen were still the exponents of the two lines of thought. He was of opinion that the graft acted merely as a stimulus to bone formation, and agreed with Murphy that the graft was eventually absorbed. Bone growth was mainly subperiosteal and the graft atrophied. He agreed that transplanted bone could grow and the truth of Wolff's law of reaction to stress and strain was unquestionable. But a sense of proportion had to be observed in applying this law to grafts. It was well recognised that immobilisation of a part in plaster caused disuse-atrophy in the bones of that part. It was therefore absurd in graft cases, which are always immobilised, to expect the graft to grow while the recipient bones were atrophying. The good results obtained by Albee were admitted, but his conclusions were not acceptable. The speaker did not use intramedullary grafts as they caused pressure-atrophy of the recipient, and also blocked the medulla. Sclerosed bone was usually considered as quite unsuited to taking a graft, but in his opinion it received grafts very well. As was well understood there were two simultaneous processes going on, osteoblastic and osteoclastic; if the former was in excess, the new shaft was completed before the grafted was absorbed, but if the latter, then the graft was absorbed before new bone had appeared in any quantity.

In remarking upon Albee's contention that some spinal grafts of compact bone had become cancellous, Mr. Mamourian pointed out that there had been no such metamorphosis, but that the cancellous bone originated from the spine. He contended that grafts simply stimulated the osteogenetic cells of the recipient bone and periosteum to new growth. He went further in pointing out how much new bone formation there was in cases of chronic bone infections, and he contended that slight infection is a stimulus also to bone growth. This led him to present a new aspect of bone-graft surgery—viz., that it was not necessary to wait for all sepsis to subside before operating, but rather would he lay down this important fact—viz., that an infection of low virulence was of assistance to the success of bone-grafting, the truth of which he had proved in many cases.

In concluding, Mr. Mamourian showed a collection of most interesting X ray photographs, illustrating the points of his paper.

FRIDAY, JULY 22ND.

The third session, Mr. ARTHUR COOKE (Cambridge) being in the chair, was devoted to a discussion on the

Diagnosis and Treatment of Injuries of the Intestines.

Mr. G. GORDON TAYLOR (London) in his opening address alluded to two classes of injured intestines—namely, those caused by a severe, or even by a slight contusion of the abdominal wall, and those associated with perforating wounds. It was the former which presented such difficulties of diagnosis. He quoted the series of 132 cases recorded in 1908 by James Berry and Paul Giuseppi, and Zachary Cope's series of 44 additional cases up to 1912. The symptoms laid down at that time were: abdominal pain, local tenderness, rigidity, vomiting, rising pulse, marked shock, bruising of abdominal wall, diminution or loss of liver dullness. He maintained that "the prognosis is so intimately related to early diagnosis and to early operation that the case should be kept under observation, and the pulse counted every half hour; and I would submit that, whenever there exists the slightest suspicion of intestinal injury, the abdomen should be explored forthwith." He went on to say that retroperitoneal injury to the duodenum was sufficiently common to demand investigation in all cases. The toilet of the peritoneum varied with the amount of soiling, which, if limited, should be mopped up, and the abdomen closed without drainage. In cases of wide contamination the peritoneum must be drained, usually by a tube in the pelvis.

When dealing with perforating wounds of the abdomen the diagnosis was not nearly so difficult, nor was the line of treatment at all doubtful, for the results of expectant treatment were appalling, and the war results of early operation were encouraging. Signs and symptoms were often self-evident—e.g., the passage of fæces and flatus through the wound, persistent bleeding, or protrusion of omentum, or other abdominal contents; and again hæmatemesis, passage of blood per rectum, and very marked shock.

He emphasised the danger of being misled by the site of origin of the wound, for he had known cases in which the wound was in the thorax, supraclavicular fossa, even the thigh, and yet the most serious lesion was intestinal. In this respect buttock wounds were very dangerous. Doubtful cases must be approached on the same lines as non-perforating injuries. He insisted that "In the abdomen there are no insignificant wounds. Every wound, whether penetrating or not, should be thoroughly explored, excised, and disinfected. In these days of improved resuscitation and operative technique the patient will suffer no detriment; nay, rather, with the excision of his parietal wound, his convalescence will be more sure, his wound will heal more kindly, and the surgeon will have that comfort which comes of assurance that no intraperitoneal injury has been overlooked."

Treatment of Injured Intestine.

Mr. TAYLOR brought forward an overwhelming array of war statistics to prove that suture was infinitely preferable to resection; at the same time it was necessary to look sanely on the subject, for it was obviously useless to cobble a crushed and lifeless piece of bowel, or one which had been widely detached from its mesentery. This specially held true for large intestine, where suture nearly always sufficed, but where resection was necessary occasionally for infarcted gut, &c. In dealing with the large intestine the surgeon must remember how frequently wounds were of a perforating type, and must be quite sure that no retroperitoneal infection of the cellular tissues had taken place. These were very sinister cases, for these tissues responded badly to infection, they were difficult of access, and the gut held sutures badly. Colostomy or cæcostomy, if done early enough, was of great assistance in these cases. He mentioned one other type of case, in which there is gangrene of the mucous membrane, with laceration of the muscle coat; and here nothing sufficed but a resection.

He then proceeded to deal with multiple resections. Previous to the war, if the gut were badly damaged in two places, the whole area of gut was resected, thereby sacrificing the intervening healthy portion; or one area was resected and the other cobbled up as well as might be. The war results, too, did not favour multiple resections; but in civil practice, double, treble, quadruple, and even quintuple resections were recorded. In his opinion the fatality of multiple resections was due not to the operative shock, but to the severity of the injury. He drew attention to the extreme fatality of duodenal injuries, and particularly wounds of small intestine combined with a lesion of the pancreas. Wounds of the jejunum were of better prognosis than those of the ileum. Wounds of the urinary bladder associated with intestinal injuries were also of bad prognosis.

In conclusion he asked that the lessons of those resuscitation wards of the casualty clearing stations should not be forgotten. Anoci-association and blood transfusion were invaluable methods of saving life, and had revolutionised the standards by which the operability of a patient was judged. It had been laid down that operations on patients with a pulse-rate of 120 were of very bad prognosis, and later on that no patient of a pulse-rate of 140 should be touched. But blood transfusion recalled many a man to a stage when operation afforded the means of saving his life.

Discussion.

Mr. BERRY said that he would confine himself to traumatic ruptures without external wounds. Much had been written on the three alleged causes of these injuries—viz., the crush, tear, and burst; the crush was far the most common, the burst being a pathological curiosity. The table shown was of interest.

	Ten London hospitals.		The Zeidler clinic.	
	1893–1907.	1908–1912.	1897–1910	
Numbers	132	44	52	
Operations	84	30	49	
Operative recovery	17	9	8	
				Total.
Duodenum	23	5	1	29
Jejunum and ileum	92	37	48	177
Colon	10	2	3	15
				221

He considered that diagnosis could and should be made earlier. The history was important, and one symptom was extremely important—viz., a point of intense continuous pain—and when this was combined with local tenderness and rigidity an immediate laparotomy should be done. The shock was not due to the perforation per se, but to some associated injury—e.g., to cœliac plexus, or the flooding of the peritoneum with intestinal contents. The reason for the absence of peritoneal flooding in so many cases was that the intestine became spasmodically contracted just above the perforation. This was impressed upon him in the case of a Russian soldier who had sustained an injury 14 hours previous to operation. On exploration no soiling of the peritoneum was found, and the gut was contracted above, but handling during the examination caused relaxation, and a great gush of fæcal contents. He considered absence of liver dullness a sign of fatal prognosis.

Clinically he recognised three types of case: (1) Rupture of all coats at the time of injury; (2) secondary rupture, where the peritoneum was intact and the patient would walk into hospital; (3) rupture of gut and other injuries. In treatment he advocated a sufficiently long incision to enable a thorough examination of the abdominal contents, repair by simple suture, local sponging of peritoneum if necessary, and drainage if much soiling. He considered the after-treatment most important. He propped his patients up and gave nothing by the mouth for four days, along with continuous drop-saline per rectum.

Mr. V. Z. COPE (London) associated himself with Mr. Gordon Taylor's dictum that all wounds of the abdominal wall must be treated with the gravest suspicion. He laid down that probing of a wound in the parietal wall should almost constitute malpraxis. He recommended a laparotomy of every case, combined with excision of the wound. In cases with contusions of the abdominal wall he considered that there were only two signs of real assistance (hæmorrhage and spinal and thoracic injuries excluded): (1) pain, (2) alteration in pulse. The pain is of a fourfold nature—viz., that complained of by the patient, that seen in the face, that elicited on pressure on abdomen, and that elicited by rectal examination. He did not agree with Mr. Berry's pessimism over absence of liver dullness, and quoted a case of Mr. C. A. Pannett that survived operation 30 hours after rupture. Vomiting, too, may be a guide to peritoneal injury. He drew attention to primary meteorism as a complication to be guarded against. He considered that results had shown marked improvement; of the last five cases at St. Mary's Hospital all had recovered.

Mr. HAMILTON BARCLAY (Newcastle) confined his remarks to gunshot wounds. He advised a midline or paramedian incision, with systematic search of the whole abdominal cavity. He quoted a case of a bullet wound, in which the wound of entry was over the right hip-joint. There were two wounds of the cæcum, four holes in the first inch of the jejunum, and the bullet was in the spleen. Hæmorrhage should always be dealt with first, and evisceration was to be avoided as far as possible.

Prof. MORISON considered that one very essential factor had been missed—viz., the education of the general practitioner. He quoted cases of trivial injuries accompanied by transient shock with a stage of apparent complete recovery followed later by collapse. He insisted that the sequence of events was as follows: (1) There was always shock at the time, however slight and transient; (2) a reaction stage always followed; (3) stage of peritonitis or hæmorrhage. He laid down that it must be a general rule

that every injury to the abdomen must be treated as if it were a penetrating wound.

Mr. F. J. S. HEANEY (Liverpool) was greatly struck by Prof. Morison's remarks, and quoted a case of his own where a slight kick in the abdomen had resulted in a great rent in the jejunum. He remarked that obstruction from adhesions not infrequently followed.

Mr. D. WILKIE (Edinburgh) emphasised the attitude of the surgeon, who should always open the abdomen whenever any doubt existed.

Mr. E. F. FINCH (Sheffield) commented on a class of case not previously mentioned—viz., perforation of the intestine by foreign bodies within it. He quoted two cases of such injury by fish bones in the transverse colon.

Mr. SOUTTAR said that before operation was undertaken four conditions must be present—viz., first-class assistance, theatre arrangements, anæsthetist, and proper control afterwards. He mentioned cases in which fæcal fistulæ followed operation, and advised that short circuit held the only hope of cure.

Mr. CHILDE asked for information upon the greatest length of small intestine that could be removed compatible with the life of the patient afterwards.

Mr. TAYLOR, in reply, said that he believed the longest recorded resection was 18 feet, but his longest resection for contusions was 6 feet 6 inches. The lesson to be learnt was that all injuries should be immediately sent to hospital.

and immunity established, the other ureter is transplanted. He divides the ureter about 1 to 2 inches from the bladder, and puts on the proximal end a Crile's clamp to avoid leakage. The distal end is ligatured, carbolised, and dropped back. The left ureter is implanted into the sigmoid flexure by a method similar to Witzel's gastrostomy. The right is inserted into the neighbourhood of the recto-sigmoid junction. His results are most striking when one considers that out of 8 cases 5 have complete continence, and 1 is incontinent at night only.

(*c*) *Liver Tumour.*—Mr. Turner then showed a boy who was admitted last February with a tumour in the upper part of the right abdomen. It was found to be a tumour in the right lobe of the liver and Mr. Turner proceeded to remove it. A wedge-shaped resection was done, including the gall-bladder, All that was left was the left lobe, the structures of the portal fissure, and the vena cava. The only bleeding of importance was from branches of the hepatic artery, and these were clamped as cut. The tumour proved to be a rare one, resembling a pure adenoma, but containing no ducts, and has been called a hepatoma. The boy, five months afterwards, appeared in the best of health.

Prof. MORISON demonstrated on cases of septic wounds, amongst them one of tuberculous disease in and around the tendon sheaths of the wrist. These had been treated with bipp and had healed well. He showed a series of cases of bone cavities treated

Cases of Intraperitoneal Implantation of Ureter into Pelvic Colon.

No.	Init.	Sex.	Before operation.		Date of opern.	Stages and time between.	Complication.	Result.	Period since opern.	Present condition.	Remarks.
			Age.	Condition.							
1	F.B.	M.	8/12	Total epispadias: incontinence.	Dec., 1912.	Two, 6 mths.	Whooping-cough.	C	8½ yrs.	In excellent health; no incontinence.	Never consulted doctor since operation.
2	E.T.	F.	22	Epispadias; incontinence.	Dec., 1914.	Two, 3 mths.	None.	C	6½ yrs.	Perfectly well.	Now Mrs. A. W. S. Has one child.
3	W.K.	M.	19	Ectopia vesicæ.	March, 1917.	Two, 3 wks.	Intestinal Obstruction.	C	4 yrs. & 3 mths.	Very well; has some incontinence at night.	Works regularly on a farm.
4	E.L.	F.	20	Epispadias.	May, 1917.	One.	Peritonitis & pyelo-nephritis.	Death.	—	—	—
5	V.K.	F.	6	Ectopia vesicæ.	Nov., 1917.	Two, 3 mths.	Extra-peritoneal abscess.	C	3 yrs. & 8 mths.	Very well.	Healthy schoolgirl.
6	J.T.	M.	13	,,	May, 1919.	Two, 2 mths.	Peritonitis from leaking ureter.	Death.	—	—	—
7	W.P.	M.	5	Epispadias; incontinence.	May, 1920.	Two, 1 yr. & 9 mths.	Extra-peritoneal abscess; urinary fistula.	C	1 yr. & 2 mths.	Very well.	Urinary fistula healed spontaneously.
8	N.B.	M.	13	,,	Jan., 1921.	Two.		C	6 mths.	Some suspicion pulmonary tubercle.	Second stage deferred on account of chest.

Mr. CHILDE demonstrated a method of resection of the stomach and intestines by means of heavy crushing clamps and the Paquelin cautery.

Demonstrations.

Mr. G. GREY TURNER (Newcastle) showed:—

(*a*) *Cleft Palates* (20 cases).—These cases were all well healed, and Mr. Turner demonstrated that some of them spoke quite well, others indifferently. One girl especially, who was operated upon quite late, spoke exceedingly well, and it was obvious that the functional result depended largely upon the intellectual standard of the patient.

(*b*) *Implantation of Ureters* (6 cases).—A full table of results is appended. It will be seen that the cases were those of complete ectopia or of epispadias with incontinence of urine. His operations were always done in two stages—first the left ureter, then the right. He considered that by leaving one ureter the patient is able to combat any pyelonephritis that may arise in the kidney of which the ureter has been transplanted. The infection having subsided as he has laid down and then filled with fat grafts. It was interesting to find fat grafts succeeding so admirably. Another series of cases was shown illustrating bone-grafting.

SECTION OF NEUROLOGY AND PSYCHIATRY.

WEDNESDAY, JULY 20TH.

At a meeting of this section, Prof. ASHLEY MACKINTOSH being in the chair, a paper on the

Diagnosis and Treatment of Borderland Cases

was read by Prof. G. M. ROBERTSON (Morningside Mental Hospital). Discussing the nature of the borderland, Prof. Robertson stated that on one side of the boundary was the region of the neuroses consisting of disorders presenting such symptoms as spasm, paralysis and sensory disturbances; while on the other side was the territory of the psychoses, which included such disorders as mania, melancholia, and dementia præcox. Between these no hard-and-fast boundary existed. The neuroses and psychoses

passed gradually from one to the other, though not all neuroses developed into psychoses. Further, this borderland was not a negligible strip of territory but a broad and extensive domain, which from its influence upon human life was a most important one. By the term borderland cases was meant those in which some form of disorder of the mind played an important if not an essential part. In some of these the symptoms themselves were clearly mental; such symptoms were phobias, anxiety states, and compulsive obsessions. Serious cases presenting mental symptoms amounting to legal insanity were excluded from the group, being definitely across the border. Even those cases which presented symptoms of an apparently purely physical character, when studied more carefully from within, were often found to be mental in origin and capable of cure by purely mental agencies. Therefore the borderland group included all cases presenting symptoms of a mental order, except those of certifiable insanity. It might be desirable to limit this large group by the exclusion of cases in which the symptoms were slight and evanescent. Three considerations arose from these conclusions. All symptoms of ill-health apart from those arising from structural alterations in the tissues might be considered as mental in origin. Pain was a purely mental symptom, and even when due to organic disease might be removed by purely mental means. Further, organic changes might depend primarily upon mental or emotional factors. Therefore all symptoms must be looked at from a mental point of view. Secondly, the value of psycho-therapy had been found to be almost unlimited. This most primitive form of treatment had always been successful when applied with discrimination; it was the only form mentioned in the Bible, and was instinctively administered by every mother to her child. The psychiatrist had systematically practised it for over a century. Pinel, Tuke, Conolly, and Clouston had all employed it in their work, though they had never systematised their methods, designated them by any particular name, nor had they bound themselves by any single method of approach. Their psycho-therapy was mental healing pure and simple, was followed by excellent results and was not based upon abstract speculations. Finally, the number of nervous cases now regarded as functional had enormously increased. The neurologist had formerly been inclined to reproach the psychiatrist because the latter was unable to demonstrate by histological methods the physical basis of delusions, but the neurologist now recognised that many of his own cases were purely functional and mainly mental.

The Rôle of the Psychiatrist.

These considerations led with a convincing directness to the important part the psychiatrist should play in the treatment of functional nervous disorders and borderland cases. Yet it could not be said that he occupied the position he ought in this respect. How many of our great hospitals had a psychiatrist on their staff? Undoubtedly the neurologist suffered as much from this divorce as did the psychiatrist.

There were three points of particular interest in the study of borderland cases from the psychiatric point of view. The first of these dealt with the possibility of suicide in patients with mental depression. Practically every melancholic was at some period of his illness a potential suicide. Moreover, the risk was greatest during the later stages of convalescence when the patient was least carefully watched, and had the best opportunities of committing suicide. Melancholia was the commonest form of psychosis and the least obvious departure from the normal. The melancholic patient was usually quiet, had some insight into his condition, and could talk sensibly on subjects unrelated to his depressive ideas. A patient suffering from melancholia was, therefore, a typical borderland case, and was also the most dangerous form of case, as far as danger to life was concerned, which a medical man could be called upon to treat. Therefore, the help of a psychiatrist should be called for in all doubtful cases of depression. Prof. Robertson suggested that were his audience to forget all that he said with the exception of the one statement that practically every patient suffering from melancholia was a potential suicide, even then his lecture would not have been given in vain. What added to the distress of the suicide of a melancholic patient was the fact that all healthy melancholics made good recoveries.

His second point was that of certification when a case ceased to belong to the borderland group. The law was not concerned with disease, but with conduct, and when this was so affected by disease of the mind that the patient was not fit to enjoy full liberty, then we had the medico-legal condition known as insanity. In melancholia the refusal to take food or remarks to the effect that life was not worth living might be valid reasons for certification.

The Emancipation of the Mental Hospital.

Finally, he entered a plea for the emancipation of the mental hospital and for the introduction of a new status for it. The Acts regulating the admission of patients into mental hospitals both in Scotland and England were antiquated in spirit and had outgrown their usefulness. They were now a curse which weighed heaviest on the poor. Why should not borderland cases, cases of mental disorders in their early and most curable stages, receive all the advantages of accommodation and treatment given in our modern mental hospitals, from which they were at present debarred by the necessity of preliminary certification and legal commission? Private patients were seeking admission voluntarily to such hospitals as Craig House in increasing numbers and exceeded the certified patients. They came at an earlier and more curable stage, one corresponding to the borderland case. If the lunacy laws were amended so that patients of small means could also enter mental hospitals for appropriate treatment, a new era of progress would be entered. Simple notification would provide all the legal security such patients needed. Then the borderland, which after all was merely an artificial legal distinction, would disappear, and our mental patients would be able to seek treatment without fear of the reproach which they now believed to attach to them.

Discussion.

Dr. IVY MCKENZIE (Glasgow), referring particularly to military cases, stated that the 1200 cases which had passed through observation wards under his charge might be divided into three categories: those in whom toxic factors predominated, those who were mentally defective, and a group of amnesic cases. The first two groups did not respond to any form of psycho-therapeutic treatment, and although they often expressed themselves as feeling better after it they did not return to work, which, after all, was the only test of value. In the toxic cases there was a history of some infection, the results of which needed treatment on ordinary general lines as a preliminary measure. The amnesic group responded to psycho-therapy.

Dr. HELEN BOYLE (Brighton) emphasised the importance of unhappiness as a factor in the production of neuroses and psychoses. Unhappiness should be regarded as an abnormal condition and treated accordingly. If a patient's occupation in life was uncongenial and a source of discontent, he or she should be advised to change it for some more pleasant mode of life. General hospitals should contain special wards for borderland cases. The patients should not be subjected to the ordinary inelastic discipline, but should be kept amused and allowed considerable freedom in the matter of seeking occupation and amusement, and should have ample and special nursing care. No case was simple in its origin, but arose from numerous factors, hence no single method of treatment could be infallible. Rest in bed was an important factor in treatment.

Dr. BEDFORD PIERCE (York) said that such treatment as was suggested by the previous speaker was commonly impossible on the grounds of expense, and was certainly not accessible to the poorer classes.

The close supervision sometimes deemed necessary for patients in whom suicidal tendencies might be suspected might be definitely hurtful and delay recovery. The choice lay between taking risks and a harmful measure of supervision, and risks sometimes had to be taken in the patient's best interests. The recognition of early cases was often difficult and early means of diagnosis was badly needed.

Dr. A. E. CARVER (Birmingham) did not deal specifically with borderland cases. He believed that in the case of neuroses in pensioners the financial element retarded recovery, and was unfavourable to treatment. He thought that prolonged separation in an institution from the patient's home surroundings was undesirable and that as early as possible a return to work was essential. Cases of the kind described by Dr. Ivy McKenzie could not be classified, as they were all too complex in origin.

Dr. W. L. RUXTON (Newcastle) dealt with the difficulties of the general practitioner in dealing with early mental cases. The indications for certification constituted one of these. He thought that in early melancholics the presence of hallucinations of hearing was an imperative indication for control in a mental hospital. Often the machinery of certification, even the emergency certificate, was too cumbrous and slow, and the practitioner was not seldom compelled to send his patient to the workhouse infirmary to avoid the risks of delay.

Dr. MARY STURGE (Birmingham) expressed the view that physical factors were very important, and were apt to be overlooked in dealing with such cases. She quoted cases of depressed and discontented women who had been relieved and altered in disposition by the adoption of such simple measures as the use of a kidney belt, a pessary, or a vaccine.

Dr. J. MIDDLEMASS (Ryhope) pleaded for a modification of the existing law in respect of mental hospital treatment. For patients of the poorer classes voluntary treatment apart from certification was urgently required.

Dr. MACKIE WHITE said that legislation in the State of South Africa was far more enlightened than our own. There, a patient could voluntarily seek treatment in a mental hospital, and during the necessary period of stay in hospital could be maintained at the public expense.

Dr. W. R. DAWSON (Dublin) said that in considering a borderland case, every aspect of the patient's life must be taken into account. Psychiatrists had long realised this, and it was now being discovered anew by non-psychiatrists. He agreed with Prof. Robertson that the dangers of suicide were greatest at the later stage of convalescence.

Dr. W. H. BRYCE believed that an open mind was essential in dealing with early mental cases from the point of view of treatment. There was too little fusion of ideas, and treatment was carried out by disciples of different schools of thought along narrow lines. Physical and psychical symptoms might coexist, and both had to be taken into account, while their relationship was often difficult to determine.

Prof. ASHLEY MACKINTOSH (Aberdeen), in concluding the discussion, said that errors of diagnosis in respect of borderland cases were too frequently made by neurologists, and many obvious melancholics were treated as simple neuroses with unhappy results.

Prof. ROBERTSON, in reply to the discussion, defined melancholia as a periodic functional psychosis, and emphasised again its dangerous character. In such cases suicide was not impulsive, but it was long premeditated. The patient's friends should always be told of the possible dangers, and thus be made to share in the responsibility of deciding for or against supervision in a mental hospital.

THURSDAY, JULY 21ST.

Dr. HARRY CAMPBELL (London) read a paper on

The Nervous Diathesis and the Blood.

The growth, structure, and functioning of the neurone depended upon its heredity and its environment. The environmental factors were plasmic and non-plasmic. The blood and the perineuronal lymph constituted the plasmic environment, the non-plasmic being synaptic and inter-neuronal. The state of the plasmic environment was responsible for whatever disease might occur to the neurone, the progressive deterioration of which during adult life depended entirely upon changes in the plasmic medium. Senility was thrust upon the nervous system by the plasma, and if this were to remain adolescent in its qualities senility could not occur. Plasmic defects might be inborn or acquired. Functional and organic nervous diseases were due more to inborn plasmic defects than to primary neuronal defects. Substances having a drug-like action were carried in the plasma and bathed the nerve cell. Two great groups of substances were present, nerve stimulants and nerve depressants. He thought that a congenital craving for alcohol depended upon the lack of these nerve stimulants, which the organism sought to make up from outside. The feelings and the emotional temperament were all determined by the blood. The endocrine organs all poured their secretions into the blood and thus influenced the nervous system. The various symptoms associated with abnormal blood states were briefly described.

Dr. GEORGE RIDDOCH (London) spoke of

Some Points in the Management and Treatment of Paraplegia.

The management of paraplegics consisted principally in the care of the bladder, rectum, and skin. The usual cause of death in such cases was urinary sepsis with toxæmia. After an acute spinal lesion, the bladder passed through an initial stage of paralysis with retention of urine, and then under favourable conditions, entered upon a phase of automatic activity. During the stage of retention, it was important to avoid both infection and distension of the bladder. With this in view the method of manual expression had been recommended, but it was not free from danger and did not completely empty the bladder. The safest and most effective method was to tie in a catheter, which need be changed only every three days. In this way repeated introduction of the catheter was avoided and the bladder was never allowed to distend. An essential preliminary to each introduction of a catheter was the washing out of the urethra, in order that organisms in its walls might not be pushed up into the bladder. Irrigation twice in the 24 hours with normal saline solution was recommended. In all such procedures the strictest aseptic precautions were necessary. When the bladder began to evacuate itself, it should be encouraged to do so, and when on irrigation signs of back-flow were seen, the bladder should be allowed to discharge its contents. The urine should be kept acid, and for this purpose acid sodium phosphate was used. If cystitis supervened, it might be necessary to perform suprapubic cystotomy. The rectum passed through the same two stages as the bladder. In the first, distension should be avoided by the use of paraffin, aperients, and enemata. The skin, while sound, should have a daily washing and friction with soap and water. The excessive sweating which often rendered its care difficult in cases of total transection, could be minimised by careful attention to bladder and rectum, distension of which was a fruitful cause of hyperidrosis. In the general management of cases, fresh air and the use of wheel chairs, as soon as the local surgical condition of the spine allowed, were important.

The Physiology of Symptom Production.

Dr. F. M. R. WALSHE (London) read a paper on the Physiology of Symptom Production in Disease and Injury of the Nervous System. In spite of many notable recent advances in neurology, very little was known of the physiological processes underlying the manifestations of disordered function in the nervous system. As neurologists they had somewhat rigid views as to the principles underlying the dissolution of function in nervous disease. The hypotheses dominating neurological thought had ceased to be favourable to progress in some respects and were

becoming traditions. Among the most fruitful of guiding principles was undoubtedly Jackson's theory of the dissolution of function in the nervous system. According to this, every case presented a dual symptomatology—negative or defect symptoms, and positive or release symptoms. These two groups, with a third small group of irritative symptoms, were commonly considered to include all manifestations of disease. Head and Rivers had added a phylogenetic factor to this hypothesis. They believed that the "lower levels of evolution" remaining after some destructive lesion represented what had been normal activities of the nervous system at an early stage of its phylogenetic development. Thus "protopathic sensibility" and the "mass reflex" were to be regarded as approximating to the normal sensori-motor reactions of some hypothetical primitive animal. In general, phylogenetic hypotheses were entirely speculative, and the view prevalent among continental neurologists that abnormal reflex reactions were reversions to arboreal activities of pre-human ancestors met with a not unexpected reply in Prof. Karl Pearson's view that our forebears were never arboreal in habit. The view that almost all bodily ailments were psychical in origin vied with the phylogenetic school of thought in present popularity. The confusion of psychological and physiological categories by those who sought to establish psychogenesis as the solution of all our difficulties often led to grotesque conclusions, such as that of Jelliffe who stated that the overflow of psychical "energy" into the "somatic pathways" of the nervous system led immediately to the lesions of disseminated sclerosis. In general, it might be urged that before we had recourse to the exclusively verbal resources of the psychologist in the attempt to determine the causes of disordered function in the nervous system, physiological factors should first be excluded.

As an example of the importance of physiological factors, the psychical and neurological symptomatology of anoxæmia were described. The sensitiveness of the nerve cell and synapse to oxygen deprivation had long been known, but had never been seriously considered by the neurologist as an important factor in the production of disordered nervous activity. Physiological experiment, confirmed by clinical experience, showed that the initial reaction of the nervous system to minimal grades of anoxæmia was the development of an increased excitability. Clinically, so-called "irritative" symptoms were often manifestations of this condition. A symptom-complex closely resembling that of tetany was readily produced in the normal individual by a short period of forced breathing, which resulted in a relative anoxæmia. The mass reflex of spinal man was considered as a phenomenon possibly dependent upon this cause, and it was pointed out that reflex responses could be obtained in the spinal animal under suitable grades of anoxæmia, which appeared identical with the mass reflex of man. In conclusion, it was urged that neurologists, despite the clamant exhortations of the psychogenetic school, could not afford to neglect physiological factors when attempting to determine the causes underlying disease of the nervous system, in favour of the allegories and verbal researches of clinical psychology.

Dr. CARVER read a paper on

Epilepsy from the Psychological Standpoint.

Our views on epilepsy had within recent years undergone considerable widening. Epilepsy was a syndrome rather than a disease, and the convulsion of epilepsy was no longer allowed to dominate our conception of the condition. The study of the epileptic personality had afforded much new and important knowledge and had shown that the epileptic might be recognised at an early stage of his malady before any convulsion had occurred. In the causation of epilepsy, psychological, physiological, anatomical, and other factors had all to be considered. The views of Pierce Clark were then discussed. The personality of the epileptic was characteristic. He was egocentric, selfish, erratic, and moody. It was impossible to predict his behaviour from day to day. The fit was a regressive phenomenon. In the treatment of epilepsy it was of the first importance to study the personality of the patient, who was essentially a mal-adjusted individual, and to help him to adjust himself to his environment. Treatment on these lines was full of possibilities, while the customary routine bromide treatment had little to be said in its favour.

Dr. DOUGLAS ADAMS (Glasgow) read a paper on

The Early Diagnosis and Treatment of Disseminated Sclerosis.

The colloidal gold reaction in the cerebro-spinal fluid was a test of early organic nervous disease of the greatest value. Disseminated sclerosis gave constantly a "paretic" curve. In the treatment of the disease he had obtained favourable results in some cases by the administration of novarsenobillon and by mercurial inunction, though as the observations were of less than a year's duration the possibility of remission apart from treatment could not be excluded. No ill-effects followed this antisyphilitic treatment. He had conducted some successful inoculation experiments in the sense that animals inoculated with material from human cases of disseminated sclerosis developed paralytic symptoms. However, no histological investigation of the lesions underlying the paralyses in the experimental animals had so far been conducted.

In a short discussion following this paper, Dr. FARQUHAR BUZZARD stated that he favoured anti-syphilitic lines of treatment, especially in respect of arsenical compounds, for disseminated sclerosis. It was important that treatment should be long persisted in. In the matter of experimentally produced paralyses in inoculation animals, he thought that unless the specific lesion of disseminated sclerosis could be demonstrated no conclusions could be drawn from the clinical observation alone.—Dr. J. CRUICKSHANK (Aberdeen) stated that in a somewhat extensive experience of the colloidal gold reaction he had never found a positive result except in neuro-syphilis and disseminated sclerosis. To differentiate the two a Wassermann test must also be carried out.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee held on July 12th 20 cases were considered, and £244 voted to 16 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 70, of L.R.C.P. Edin. who practised in Somerset and died in 1917. Applicant was left quite unprovided for on the death of her husband, and was helped by a brother-in-law, but he is now dead. She has been living on her savings, and they are now exhausted. Two sisters allow her £36 per annum, and board and lodging cost 25*s.* per week. Voted £18 in 12 instalments.

Daughter, aged 61, of L.R.C.P. & S. Edin. who practised in Filey and died in 1895. Applicant lost all her belongings through a fraudulent solicitor. She used to earn a little as a journalist, but cannot get work now and appeals to the Fund to help her. Rent and rates £33 per annum. Voted £18 in 12 instalments.

L.R.C.P. & S. Edin., aged 70, who practised in London and Cheshire, but now unable to work owing to paralysis agitans. He is dependent on his wife, who earns £3 5*s.* per week as a clerk. They are living with applicant's father-in-law, who has a pension and who is also helpless, and pay £2 per week for their board and lodgings. Voted £26 in 12 instalments.

Widow, aged 68, of M.R.C.S. Eng. who practised at Southam and died in 1882. Owing to chest and heart trouble applicant has not been able to earn anything for the last five years. For the past two years she has been living on proceeds of the sale of the furniture; these have now gone, and applicant asks the Fund to help her. She has been living with a married daughter, but cannot do so any longer, and her son allows her £12 per annum. Voted £26 in 12 instalments.

Widow, aged 41, of M.B. Irel. who practised at Enfield and died in 1920. Applicant left with four children, ages 5 to 16. The second boy, aged 14, provided for by uncle. The eldest son, aged 16, is consumptive, and has just returned home from a sanatorium. Applicant has sold her furniture, and is now living in rooms. Since September, 1920, she has received £114 from investments. Voted £18 in three instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

Reviews and Notices of Books.

MENTAL HOSPITAL MANUAL.

By JOHN MACARTHUR, M.R.C.S., L.R.C.P., Senior Assistant Medical Officer, London County Mental Hospital, Colney Hatch. London: Oxford Medical Publications. 1921. Pp. 215. 15s.

IN his preface Dr. Macarthur says that his book is an endeavour to place before a newly joined medical officer in a mental hospital those methods of treating the insane which experience has proved to be satisfactory. This purpose is successfully accomplished, provided it be remembered that the hospital is a large public institution in which careful organisation and elaborate routine are absolutely necessary. In an institution with some 2500 patients of all kinds, with authority centralised in a single medical superintendent, measures must be taken to safeguard the patients, prevent accidents, and fix responsibility should anything go wrong that would be unnecessary in a small hospital. The book contains, printed in full, the wording of no less than 20 notices and charts, and all these in addition to the multifarious statutory notices required by Act of Parliament and the Board of Control. Among these are forms dealing with diet, medicine, seclusion, weights, struggles, sleep, suicide, escapes, fits, visitors, tuberculosis, dysentery—by which it is seen that much reliance is placed on written instruction and reports. But before sympathising with the young medical officer inclined to rebel against so much routine, the nature of the work and the size of the institution must not be forgotten.

The first paragraph of the book quotes the late Dr. Charles Mercier as saying that a mental hospital exists "for the detention under care and treatment of persons who are inclined to be melancholy or turbulent, have tendencies to injure themselves or others, and are unable to protect themselves from ordinary sources of danger." Dr. Mercier used the word "asylum," and his definition is sound, but when Dr. Macarthur misquotes him by using the term "mental hospital" he fails to notice an important distinction which affects the whole point of view. The central thought of the one is protection and detention, and of the other treatment. This is no pedantic refinement, for evidently Dr. Macarthur means asylum throughout and not hospital. Nowhere in his book does he mention voluntary patients. It is never imagined that persons disturbed in mind should themselves apply for treatment and remain of their own free will. It is of course true that the law is so interpreted that voluntary patients cannot be received into our county and borough institutions, but a medical man writing such a manual as this should have a wide outlook, and not accept the existing procedure as satisfactory. Would there not be less prejudice against these most efficient institutions if there were a constant stream of voluntary patients passing through them? They could then rightly be called hospitals. The critical reader cannot but wish that there was less asylum and more hospital throughout the book. The impression is given that the new patient is engulfed in an inexorable machine, magnificently designed, perfect in its organisation, but lacking in soul and sentiment. Speaking of the admission of new cases, we are told, "in the case of a female the patient is stripped, weighed, measured, and put to bed in the presence of the head nurse, the charge nurse of the ward, and the relieving officer's female officer, in order that all marks, bruises, etc. . . . may also be seen by the representative of the guardians." This is not a hospital method of receiving a new patient, and cannot be helpful in treatment. One wonders what a sensitive depressed patient would think of her reception, and whether many do not resent this routine as a needless indignity. Again, the printed rules say that a patient cannot be visited until a month has elapsed after admission. Surely this may sometimes be a real hardship, whilst fixed rules of this kind create much prejudice against asylums. In two places the author recommends the "thorough and sudden searching" of all the patients in the ward on account of the tendency to collect rubbish and contraband articles. Whilst realising this may be necessary sometimes in certain wards, an impression is given of an arbitrary interference with personal freedom that seems unnecessary. Indeed, it almost seems that the guiding principle throughout the book is "safety first." Because once an ingenious and misguided patient made a screw-driver out of a stay-busk, surely the peace of mind of generations of patients should not be disturbed in order to prevent a repetition. Safety first is a comfortable formula for officers and staff, but is often positively hurtful to patients. How often it happens that convalescence begins when patients are trusted. There is good reason to believe that maniacal states may continue indefinitely under irritating surroundings, and similarly depressed states continue until rigid supervision is relaxed.

These criticisms are directed perhaps more against the existing system of great county asylums than against the subject matter of this book. If Dr. Macarthur had not strictly limited himself he could no doubt have said much on the wider subject. It would have been interesting to hear what he thinks of centralised management, which places all authority in the hands of one person, and more, what of the system by which several of these asylums are grouped together, with the result that liberty of action is curtailed by standardised routine. There is, moreover, no reference to research or the coördinated study of mental disease, nor is the subject of study leave mentioned. The importance of the diploma of psychological medicine and its indirect value in arousing interest in the scientific aspect of the asylum officer's work is ignored.

The administrative duties are excellently dealt with, and the volume is full of sound practical advice. Straightforward dealing with the insane is advocated whole-heartily—e.g., any attempt to give drugs by subterfuge or in food is condemned—medicines should only be given openly, and if refused in serious cases, instead of deception, the stomach tube should be used. He urges the value of good food, and suggests that it is both wiser and more economical to spend money on suitable diet than on drugs. As a practical guide to the treatment of the insane the book is valuable, and we advise all who undertake the treatment of mental cases in private to read it, so that they may learn the high standard of treatment that is given in our public hospitals. But in dealing with excitement and sleeplessness too much reliance seems to be placed on drugs. Nearly all newly admitted patients have been already overdosed with sedatives, and yet the use of paraldehyde and hyoscine is discussed on the day of admission "if it be necessary to quieten the patient." When advocating the use of 2 minims of croton oil in half an ounce of castor oil in acute mania with constipation, the author adds, "it need hardly be pointed out that this drug (croton oil) should be used as medicine, and no idea of punitive treatment should ever be suggested with regard to its use." And in speaking of cold baths a similar remark is made. It should be unnecessary to say these things, but the painful impression is given in another column that such episodes have happened.

It is to be hoped that Dr. Macarthur will soon be asked to prepare a new and revised edition, for the book is a valuable contribution to medical literature.

EXPERIENCES OF AN ASYLUM DOCTOR.

With suggestions for Asylum and Lunacy Law Reform. By MONTAGU LOMAX, M.R.C.S. London: George Allen and Unwin. 1921. Pp. 256. 12s. 6d.

Dr. Lomax's book is dedicated to the insane poor in sympathy with their sufferings and in the hope of alleviating their hardships. Since it is an attack both

in general and in detail on the whole of present-day asylum administration, it is relevant to inquire with what equipment the author addresses himself to his task. Dr. Lomax is not a regular member of the asylum medical service; he tells us himself in his preface how he came to be interested in asylum work. A life-long student of psychology, and having retired from general practice, he applied when war broke out for employment in a large county asylum, at which he remained for two months, being transferred later at his own wish to a second asylum, one of the largest in the country, where he remained for nearly two years, his fellow officers being a Dutchman, an Australian, and an Irishman. It was therefore as a medical man of mature age and without special experience that he approached asylum life. The book is addressed to the general public, and would, he says, have been very differently written had it been addressed to the medical profession.

Dr. Lomax freely admits that those concerned in asylum administration have themselves regretted the grave defects and abuses which have crept in, but which cannot now be rectified without far-reaching administrative and legislative reforms; and he mentions especially the valued work of the Medico-Psychological Association. The delay in carrying out reform he attributes to lack of cognisance of the facts on the part of the public, and to their ignorance of the reasons for its necessity. The author divides his book into ten chapters, dealing first with asylum administration in general and the problem of insanity, going on to describe in detail the wards and general asylum routine, the various forms of restraint, the system of workshops and outdoor labour, the dietary of the inmates, the position and duties of the medical superintendent, the status of the assistant medical staff, the attendants and other officials, concluding with two chapters of a constructive character in which he sets out the legislative reforms which he desires to see and the ideal asylum as it might exist when these reforms have been carried out. When the book was written, shortly after the conclusion of the war, the author hoped that these reforms were within the range of practical politics, but he now fears they must perforce be relegated to more peaceful and prosperous times.

We need not quote in detail the author's indictment. He simply describes in plain terms what he saw and heard during his office, and assumes it to be typical of asylum practice. If this is so, asylum patients in winter are allowed to get wet in the airing courts, they have no overcoats, and the increase of bronchial and rheumatic affections is due to preventable exposure. Patients are isolated for punitive purposes by the attendants. Croton oil in 2-minim doses is the recognised method of taming troublesome or refractory cases. To the author, in fact, the whole system of pauper asylum administration in this country—he admits exceptions in the case of individual asylums—exists to detain and restrain demented paupers, never, except accidentally, to treat and, where possible, cure them. Dr. Lomax apparently overlooks the fact that the Board of Control exists primarily for protecting the liberties of the insane patient and not to deal with his treatment. Suggestions in regard to the latter can be made to the visiting committees, but it rests with them whether they are followed or not.

Dr. Lomax's proposals for legislative reform include the abolition of the word "lunatic," the provision of treatment for the early stages of insanity without certification, the revision of the constitution and power of visiting committees, drastic curtailment of the authority vested in the medical superintendent. The administrative reforms recommended include the gradual conversion of the barrack into the villa or cottage system, the appointment of a visiting medical staff, a more comprehensive and varied dietary, provision of open-air and isolation treatment of consumptive cases, revision of the rules for keeping case-books, and a more comprehensive use of parole in suitable cases.

Dr. Lomax's indictment of asylum administration is severe in the extreme. We should hesitate to accept much of it as an uncoloured statement of personal observation did it not agree in important respects with the contents of a pamphlet entitled "Life in a Madhouse" (National Labour Press, price 3*d*.) from the pen of a war-time male attendant. Allowance must be made for the painful impression made on untutored minds by continued contact with the saddest forms of human experience. We can hardly doubt either that inquiry will follow or that it will be welcomed by asylum superintendents, many of whom know the value of public interest and are anxious that all the facts of asylum life shall be properly appreciated. Some of the author's statements may prove to be unfounded except as isolated occurrences. Others may rest on false deductions, but enough remains to justify a searching inquiry, which cannot fail to benefit both the medical staff and the sick poor under their care.

AMEBOID MOVEMENT.

By A. A. SCHAEFFER, Ph.D., Professor of Zoology, University of Tennessee. Princeton: University Press. 1920. Pp. 156. 10*s*. 6*d*.

IN this readable volume the author has collected together a great number of observations, mostly made by himself, on the mode of locomotion in the different kinds of amœbæ. The streaming of the endoplasm is regarded as essentially the same phenomenon as the streaming which is familiar in plant cells. A special result of this streaming is the formation of a temporarily differentiated ectoplasm which, while not necessarily resulting from streaming, is essential for locomotion. Outside the ectoplasm is a third layer, functionally if not morphologically distinct from ectoplasm, whose existence is best studied by watching the movements of extraneous particles that have stuck to it; this "surface layer" moves independently of the ectoplasm and of the animal as a whole, and is activated by changes in surface-tension. From a very large experience in observing their behaviour the author seems loth to believe that the amœba is an automaton whose activities are demonstrably due to external stimuli, and he appears to be inclined to give it credit for a tolerable amount of intelligence and free will. Interesting observations, illustrated with good diagrams, lead Prof. Schaeffer to the conclusion that the wavy path of the amœba's progress represents a projection of a helical spiral on a plane surface. He extends this by observations on ciliates, spermatozoa, flagellates, blindfolded swimmers and walkers, to the generalisation that moving organisms in which orientating organs are absent or not functioning always move in orderly helical or true spiral paths. The route of the amœba is made up of segments of circles, and is strikingly similar to the tracks which men make in their attempts to regenerate footpaths straight across newly ploughed fields.

DENTISTRY.

Prosthetic Dentistry. A Text-book on the Chair-side Work for Producing Plate Dentures. First edition. By DOUGLAS GABELL, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon to the Royal Dental and Charing Cross Hospitals. London: Henry Frowde and Hodder and Stoughton. 1921. With 58 illustrations. Pp. 237. 12*s*. 6*d*.

THIS book "deals with the chair-side work for fitting ordinary dentures in the natural order for such work, discussing each step as it is taken," and it is the outcome of the author's many years' experience as a practitioner and teacher. The book opens with an excellent account of the indications for and against removable and fixed appliances. There are chapters on the methods of obtaining impressions of the mouth;

taking the bite; the strength and rigidity of dentures; and the general methods of their retention. The author insists that dentures must be designed and constructed to avoid as far as possible injury to the gum margins, and we are pleased to see that he does not ignore springs as a useful method for retaining them. The work should prove of value to the practising dentist, who will find information therein which will help him to smooth away most of the difficulties he meets with in the adaptation of dentures.

Local Anæsthesia. Its Theory and Practice in Dental Surgery. First edition. By NORMAN BLACK, L.D.S. Eng., Lecturer on Dental Surgery and Pathology, Dundee Dental School. London: John Bale, Sons and Danielsson. 1921. Pp. 73.

COCAINE as an anæsthetic in dental surgery first came into prominence about the year 1887. The general use of the drug, however, fell into abeyance owing to the extreme toxic effects which at times followed its use. With the introduction of drugs with less toxic properties and improvement in the technique of administration, local anæsthesia has slowly gained in favour with dental practitioners. In this useful little book the author describes concisely the technique for the production of local anæsthesia by the infiltration or nerve-blocking methods. To the dental practitioner anxious to acquire a knowledge of local anæsthesia we can cordially recommend Mr. Black's excellent little book.

JOURNALS.

Journal of Pathology and Bacteriology, Vol. XXIV., No. 3, July, 1921.—Studies in Heterophile Antigen and Antibody, by T. Taniguchi. Tissues from a variety of animals will, when injected into rabbits, cause the production of hæmolytic immune body for sheep corpuscles. These heterogenic antigens occur in the guinea-pig, horse, dog, tortoise, &c., but not in the ox, pig, man, goose, frog, &c. Organs may contain them while the blood corpuscles of the same animal may not. The heterophile antibodies thus generated react with the lipoids of the tissues, especially the lecithin fraction, but these lipoids will not act as antigens nor will the proteid residue which remains after extraction of the lipoids, the natural proteid-lipoid complex being required.—On Acute Yellow Atrophy of the Liver and the Fatty Infiltration of the Liver and Kidneys which Results from the Action of Certain Poisons on the Liver, by A. G. R. Foulerton. The author describes material from three cases of poisoning by trinitrotoluene, seven cases by arsenobenzol compounds, and single examples poisoned by diphenylchlorasine, antimony tartrate, and corrosive sublimate. Analyses of fat are given, also estimations of the distribution of arsenic in the tissues where its high concentration in the suprarenals is noticeable.—The Development of the Female Phase of the *Leucocytozoon Syphilidis*, by J. E. R. MacDonagh. The author gives further details of the appearances which he interprets as being phases in the life-history of the parasite of syphilis.—On the Pathology and Pathogenesis of Spirochætosis Icterohæmorrhagica, by C. Basile. The author gives an account of the disease in guinea-pigs which adds little to the description in Martin and Pettit's monograph. He thinks the hæmorrhages are more important than others have supposed and that they largely account for the jaundice.—A New Method for the Staining of Bacterial Flagella, by the late H. G. Plimmer and S. G. Paine. The original must be consulted for the details of what appears to be an easy and successful method.—Notes on the Histopathology of Typhus Fever, by A. C. Stevenson and A. Balfour. A study of sections from five cases of fatal typhus in the Caucasus obtained by F. E. Reynolds, with a useful summary of the observations of others. Special attention is drawn to the single layer of mononuclear cells in the perivascular spaces in the brain. With regard to the discovery of Rickettsia-like bodies, the authors note that they have found small diplococcal forms which might well be the parasite only in the nerve cells of the cerebrum, the vessels of the brain and lung, the cells and vessels of the splenic pulp, and the Kupffer cells of the liver.—The Effect on the Guinea-pig of Deprivation of Vitamine A and of the Antiscorbutic Factor with Special Reference to the Condition of the Costochondral Junctions of the Ribs, by F. M. Tozer. An extensive histological investigation of the material used by Dr. Chick and her colleagues in their nutritional inquiries at the Lister Institute. Deprivation of fat-soluble or antiscurvy vitamin leads to marked changes in the bones, growth stopping, and the whole structure becoming depauperated. There is no definite difference in the mild cases; in scurvy, however, the changes proceed to complete disorganisation of the costochondral junction with much secondary fibrosis.—The Sizes of the Red Blood Cells in Emphysema, by C. Price Jones. Examining 20 normal persons, 22 cases of emphysema, and 15 cases of cardiac failure, the author finds by precise methods that the mean diameters of the red corpuscles are 7·2, 7·7, and 7·2 μ respectively. Statistical analysis shows that the difference is far beyond any error of the method. The cardiac cases show that the large size in emphysema is not due to increased acidity due to circulatory failure. In one case studied in detail it was found that the size fluctuated with bodily activity as it does in normal people.—The Lesions Produced in Rabbits by the Inoculation of Streptococci Isolated from Rheumatic and Other Lesions in the Human Subject, by W. W. C. Topley and H. B. Weir. The authors show that it is possible to produce in rabbits, by inoculation with streptococci derived from cases of acute rheumatism, lesions which reproduce many of the features of the disease in man, and that similar lesions may be produced by the inoculation of streptococci obtained from sources which there is no reason to associate with rheumatic infection. The authors discuss, but do not solve, the doubts which these observations raise with reference to the existence of a specific *Streptococcus rheumaticus* and a specific disease acute rheumatism.—A Rabbit's Kidney Affected with a Parasitic Mould, by F. J. F. Barrington.—Observations on the Wassermann Test, Using a Method of Prolonged Fixation at Ice-chest Temperature, by E. J. Wyler. The method is more sensitive, but there is apt to be a weak non-specific fixation.—On Heterophile Anaphylaxis, by T. Taniguchi. Symptoms apparently anaphylactic in character may be produced by injecting into guinea-pigs the serum of rabbits containing heterophile antibodies. The serum of some animals contains heterophile antibodies, hence it is possible that some cases of anaphylaxis may be due to the inoculation of antigens of which the individual has had no previous experience.—The Syphilis Precipitation Test of Sachs-Georgi, by N. Yoshinare. In 1575 parallel tests the answers coincided in 90 per cent., discrepancies are more numerous in treated (19 per cent.) than in untreated (7 per cent.) cases.—Differentiation of the Streptococci, by H. W. Crowe. Further examples to show the value of chocolate blood agar for which the recipe is given. The streptococci isolated from the roots of more or less healthy teeth are usually of several different kinds.—Diffuse Carcinomatosis of the Stomach with Metastases, by G. M. Findlay.—Aldehydes as Mordants in the Staining of Fats and Lipins, by J. Lorain Smith and T. Rittie. Formaldehyde, acetaldehyde, and benzaldehyde act as mordants in staining fats and myelin by Weigert's method. Pure solutions have no action, the presence of some polymerised aldehyde is necessary.—The Production of Purpura in Birds and Amphibia by Inoculation with Thrombocyte Antisera, by J. C. G. Ledingham and H. M. Woodcock. Sera prepared in rabbits by repeated doses of thrombocytes from pigeon blood cause local purpura when inoculated into pigeons and a great diminution in the number of thrombocytes in the circulating blood; this affords further evidence that these elements of the blood are homologous with mammalian platelets.

THE LANCET.

LONDON: SATURDAY, AUGUST 6, 1921.

The Prevention of Tubercle.

A NOTEWORTHY feature of the important Conference of the International Union against Tuberculosis, held in London last week and briefly reported on p. 301, was the comparatively little attention paid to treatment by those who contributed to the discussions. Questions of racial incidence and immunity and measures of prevention occupied pride of place. The views of Colonel G. E. BUSHNELL, Prof. S. LYLE CUMMINS, and others, who see in tuberculosis "a disease of civilisation," as Prof. CALMETTE expressed it, are well known, though, for our part, we prefer Sir ROBERT PHILIP's description of tuberculosis as "a vicious by-product of an incomplete and ill-formed civilisation"; for a by-product of civilisation is by no means the same thing as civilisation itself. The art of modern medicine consists, as does the art of the chemist, in the elimination of superfluous and harmful by-products, and if the worker in tuberculosis could only determine experimentally the exact conditions upon which results depend, and eliminate or control those which give rise to useless by-products, civilisation might still be allowed to pursue its tranquil path. Great interest attached to Dr. ARMAND DELILLE's exposition of the "boarding-out" system of GRANCHER. All speakers were agreed that infection with the tubercle bacillus takes place in the majority of instances in childhood, and that the clinical recognition of such infection is frequently impossible. But, given the manifestation of certain stigmata associated from time immemorial with tuberculosis, reinforced by a more or less definite sensitiveness of the skin to tuberculin, we may presume the presence in the child of a focus of active disease—it may be insignificant and occult—and take measures accordingly to prevent further development. GRANCHER boarded these children out with families in the country, paid for their maintenance and education till they reached adult age, and trained them for occupations which they could afterwards follow. Under these favouring circumstances no one would question the likelihood of good results. The doubt alone is how far such a system can be made applicable to an infantile population, the great majority of whom are infected, and the great majority of whom, it must be added, are, even under unfavourable circumstances, not going to develop tuberculosis in an active and clinically recognisable form. The separation of children for long periods from their parents, apart altogether from the difficulties of inducing the latter to bear their part of the expense involved, raises questions of moral and legal import demanding careful consideration ere such a scheme were to be embarked upon in this country on a scale commensurate with its importance. An extended application of the open-air school system would probably do much to tide children over the danger zone between occult infection and florid disease, and it is obvious that the GRANCHER system must, if it is to succeed, be a matter for the State, since those whom it involves are all or nearly all of school age.

In his lucid summary of State action in the prevention of tuberculosis, made at the Conference, Sir GEORGE NEWMAN laid great stress on the necessity of after-care. We incline to think the prefix "after" might now be omitted, for the problem involves not only the care of the patient after completion of his institutional treatment, but the care of the family and dependents during or even preceding the treatment, as reference to the records of the admirable Care Associations in existence will readily demonstrate. How far the State should intervene in this matter is an open question. The principle of administering voluntary funds through the medium of the tuberculosis officer and his nurse, without the stigma of charity and the inevitable catechism of officialdom, is working smoothly enough in practice, and so long as the grants are considered only as supplementary to those already given under the Insurance Act by the county councils, and by the Poor-law and other authorities, the distribution might well be left to the voluntary associations as at present constituted. But this subject, important though it is, was but an interlude in the Conference, the key-note of which was the prevention of tuberculosis, wherein lies the great hope for progress in the future. Treatment remains at best merely palliative, an attempt to limit and circumscribe the damage which the horse may be expected to inflict when it escapes from the stable before we have had a chance to lock the door. It is true that some of the most eminent investigators in tuberculosis seem to have reached the point of gloomily surveying the prospect and propounding questions to which they are only able to answer, "We do not know." None the less, whether we know the reason or not, a study of the death-rate from tuberculosis during the last thirty years suggests that it is a moribund disease.

School Hygiene.

THE annual reports of the officers of the School Medical Service are now being issued, and show the increasing interest and effort being manifested on behalf of the children. The reports are appearing in all sorts of shape and size, and once again we must point out how much convenience would be served if a uniform format could be adopted. This should be the easier because the Board of Education have lately issued instructions to school medical officers regarding the contents of their annual reports, showing that information is sought which can be compared and collated. If such information arrived in a shape which allowed of filing or binding, it would be available as long as it was pertinent. In the words of one of the officers, "these instructions of the Board constitute in effect a species of school medical catechism, and I find it particularly difficult to answer this catechism to the satisfaction of the Board, and at the same time to write a report which shall be readable and instructive to the Education Committee and the public." We sympathise with the obvious difficulty, but the issue of the questionnaire is an excellent move on the part of the Medical Department of the Board, for the answers show up lacunæ in the service, and also help us to become aware of much ignorance not only in remote villages but also in high places.

The first important heading asks for a general report on "school hygiene," the scope of which is

not explained, while the plumber and sanitary engineer and the medical officer of health have all to be considered here. There is no reference to any hygienic activity directed towards school habits, hours, and environment, the hygiene of learning and the effects of fatigue. But all the vast mass of knowledge which we are now acquiring ought to have its outlet, with practical results of greater importance than many things which will be catalogued in the school reports. For, at very large cost, much useful work has been started, and the inquisition of the Board of Education should mean that during the next five years an enormous advance will be made in the provision of such preventive measures as feeding, open-air schools, nursery schools, school baths, provision for the crippled, epileptic, and special scholars, as well as extension of curative measures in medical, surgical, and dental treatment, almost everywhere reported as being insufficient. The school nurse has proved herself, and should become, the general bond between the school and the home. And during the coming period of activity we may look for greater help from the public. Some may ask—Is all the official louse-catching worth the cost? Is ringworm the deadly thing some of the reports suggest? The answer is that only by making these preventable conditions prominent can the medical profession teach the public to help themselves. Doctors and parents should establish ideals and help each other to set up standards of reference and comparison. The standard of hearing, by the way, adopted in these reports seems to be hearing the forced whisper at 20 feet. This looks like a confusion between feet and metres. We do not want, however, to pick small holes in the official work, but rather to urge the Board of Education to think of large policies. We look to the Medical Department of the Board to establish standards and to plan work of permanent benefit to humanity.

Medical service for the growing child can be far too strictly confined by medical inspection and treatment, subordinate to officials. These will have other interests and be wanting in the expert knowledge required for the appreciation of the relations between modern medicine and hygiene and the education of the growing child. Generally speaking, the reports of the local medical officers of health show too little expenditure on real school hygiene, want of method in estimation and comparison, and too much outlay on the trivialities of administration, often, indeed, a mere cataloguing. Health of the people is a commodity which can be had if we pay for it. It can be bought cheapest in childhood. It is of more value than any other commodity to the people of these islands, who, on the average, pay so heavily in health and years of life for their industrial supremacy. The medical staff of the Board of Education have an enormous opportunity before them.

The Proper Place of Embryology.

IT may be said in a broad way that human embryologists differ from general embryologists in that the former deal mainly with organogeny, whereas the latter are concerned largely with questions of more general and evolutionary interest. In this way, and also because they have undergone medical training, human embryologists are ready to see the connexions between their observations and those of the clinician or pathologist. Sir ARTHUR KEITH, in his popular lecture at Newcastle-upon-Tyne, delivered at the recent meeting of the British Medical Association, showed that the healing of wounds is not a manifestation of a power acquired during life, but of one that is inherent in us from the beginning, and inherited by us from the lowest forms. So he terms "evolutionary wounds" those clefts and hollows which are closed in and covered over during embryonic life—a bold terminology at first sight, but one of which the essential justness becomes apparent after very little reflection. Embryologists must be struck by the similarity between the processes they are watching and those which, occurring at a later period in life, are termed pathological; but, as a rule, the matter ends there. For, owing to our ignorance of the causes which underlie growth and development, the observations are worth little save perhaps for the bolstering up of some theory. The phenomena of growth are dependent on much beside mere contiguity and mechanical processes, and we know practically nothing of these other factors. They appear to have some relation to those of regeneration, such as we see in lower vertebrates, and this faculty seems to be merely a modification of the more generalised power of complete regeneration which is found in certain invertebrates and among plants; it is, therefore, a very old property of living organisms, and one which, traced back, is apparently connected with the foundations of development of the whole body. Perhaps, then, this power, which Prof. KEITH so admirably describes in a suggestive address, may be a modern representative of the force making the double embryo of the divided echinoderm egg; or we may even come to look on the scar of the amputation line as the equivalent of the regenerated limb of the dismembered newt.

But such pleasant fantasies do not help us very much in the day's work, nor have they (as yet) any practical bearing on the consideration of disease or injury by the pathologist. It is not so, however, with the matters of fact and observation which formed the basis of Prof. KEITH'S lecture, and they make a strong plea for closer coöperation between the embryologist and the pathologist. The student, or the work-a-day doctor, has little idea of the value of embryology among the foundations of pathological anatomy; it is fairly safe to say that, with the exception of such things as hare-lip and cleft palate, spina bifida, or certain malformations of the external genitals or of the heart, he does not trouble to recognise the existence of any connexion between developmental and pathological processes and conditions. He may, if pressed on the matter, go so far as to admit the possibility of a "developmental failure" or something of that sort, but he has no clear idea of what he means or implies by the phrase. Yet it might be said with some justification that embryology has at least as much to do with a comprehension of pathological anatomy as any other single science. It would be good for pathologist and embryologist to work together for the advancement of both; the pathologist might have some light thrown on dark places, and the embryologist would be encouraged to proceed with his elucidation of detail to definite purpose. Thus between the two the inquiry could be pushed back a step or two, even though there would remain for solution the innumerable mysteries of life and its reactions.

A necessary preliminary to this is that the teaching of embryology in the schools should undergo a change, and the dreary subject which goes by that name in examinations be altered to some purpose and made into a live study. Practical courses in embryology must go further than casual investigation of the segmentation of a frog's egg and the early stages of the private life of a chicken, and the student

ought to be seriously examined on actual developmental detail. The arid statements of embryologists—mainly German—of the last generation but two, once they have been shown to be wrong in part or altogether, ought to be scrapped remorselessly, and a student who brings out some developmental statement which is known to be untrue ought to be dealt with on the lines which would be apportioned to one who maintained some pre-Harveian view of the circulation. At present, the teacher who is a competent embryologist hesitates to put his information before his students, partly because it would almost be a waste of precious time, things being as they are, and the "embryology" of the syllabus being mostly a farce; and partly because he knows that his students may at any time run up against an examiner whose antediluvian views on the subject may lead to their confusion. Thus the standard of embryological teaching is practically set by those who are not embryologists and do not recognise the differences between the embryology of to-day and that of their youth. Many examiners would be glad to see the semblance of embryology removed from the examinations if the subject cannot be properly and systematically dealt with. We imagine that few of the general run of medical students could form a mental surface-picture of the very simple developmental processes so clearly and shortly described by Prof. KEITH, although they will be expected, at a later stage in their studies, to talk with some appearance of knowledge about the developmental affections of the regions concerned. This is not as it should be, and the fault can only be met by giving embryology its proper value in the curriculum. General embryology ought to be an important part of the biology course through which each student must go, and human embryology should be an equally—or more—important part of his anatomy course; then his pathology would be firmly based on physiology, anatomy, and embryology, with bacteriology, and thus a good foundation would be laid on which to erect a clinical superstructure.

FACTORY HYGIENE IN 1920.

No evidence of the rapid progress which is taking place in the human side of British industry is more direct than that afforded year by year in the Reports of the Chief Inspector of Factories. These reports in recent years have not only told of important progress made, but have been presented in a more interesting and readable form than formerly. Even the size of the report now before us (H.M. Stationery Office. Cmd. 1403. Price 1s. 6d.) is changed; it is no longer a cumbrous blue book, but a pamphlet of which brevity, clearness, and human interest are the distinguishing features. The reader cannot fail to be amazed at the complicated code of legal requirements, orders, and regulations which have to be administered, and at the intricate knowledge of multifarious industrial processes needed for carrying on the work. Mr. R. E. Graves tells how the feverish boom in trade which followed the great war extended into 1920, only to give way to a remarkable depression before the year was over. The tendency for small workshops to disappear before large factories has been marked; there were 3766 fewer workshops and 4610 more factories than in 1919. New developments are referred to: the village van and cart builder is converting himself into a motor repairer; a dead meat industry on American lines is appearing at Drogheda; improved utilisation of water power for a woollen mill near Edinburgh marks an interesting advance; and in the Midlands there has started an engineering works managed and staffed solely by women. To the hygienic aspect of these remarkable developments we shall have occasion to return.

Annotations.

"Ne quid nimis."

LOCAL VOLUNTARY HOSPITALS COMMITTEES.

THE Voluntary Hospitals Commission has shown no delay in getting to work. Letters have been addressed to the clerks of county councils and county boroughs in England requesting the assistance of the councils in the constitution of Local Voluntary Hospitals Committees, as recommended by the Cave Committee. As a general rule the county, with those county boroughs situated within it, will be taken as a unit; but the larger county boroughs will be constituted units by themselves, and some of the counties containing but few hospitals will be combined into one area. Should there be a general consensus of local opinion that local circumstances are such as to call for variation of this scheme, alternative suggestions emanating from the area will be considered. Separate arrangements on analogous lines are being framed for Scotland and Wales.

As a rule the Local Committees will consist of two members nominated by the county councils, and one by each county borough within the county. There will be two medical practitioners nominated by the local medical committees in the area, one to be on the staff of a voluntary hospital and the other a general practitioner; and two hospital representatives not medical practitioners, one for the larger general hospitals and one for the smaller and cottage hospitals in the area. The Commission will nominate not more than five additional members from among those resident in the area, one at least of whom will be a woman, and the Local Committee will select its own chairman from among its members or from outside. The functions of the Local Committees will include the following:—

(*a*) To act as local advisers to the Commission.
(*b*) To collect information as to the needs of their areas.
(*c*) To further coöperation between hospitals.
(*d*) To coördinate appeals.
(*e*) To consider the possibility of arranging the transfer of patients where this can advantageously be done.
(*f*) To prepare, where practicable, schemes of coöperative purchase.
(*g*) To advise as to the adoption of a uniform system of hospital accounts throughout their area.
(*h*) To organise systematic contributions both from employers and by employees in areas where no such systems at present exist.
(*i*) To undertake the distribution of any contributions made by an approved society in cases where the society is purely local in character.
(*j*) Generally to take every possible step to assist the hospitals in their area to maintain the present voluntary system.

Local Committees will also consider generally the existing provision of hospital accommodation in their area. For this purpose the Commission has adopted the following definition of a voluntary hospital:—

An institution (other than an out-patient dispensary) managed by a responsible committee, and wholly or mainly supported from voluntary sources (including income derived from endowments or investments), the object of which is to provide medical or surgical treatment of a curative character; an auxiliary institution (such as a convalescent home) being eligible for assistance only in so far as it increases the facilities of hospitals from which it receives patients.

In the metropolitan area the King Edward's Fund will act as the Local Committee, and will be responsible for advising the Commission on applications from voluntary hospitals within the nine-mile limit, which is the area now covered by the operation of the King Edward's Fund.

ADENOMYOMA OF THE FALLOPIAN TUBE.

Dr. Arthur E. Mahle,[1] of the Section of Surgical Pathology of the Mayo Clinic, reports 23 cases of adenomyoma of the Fallopian tube which were found

[1] Surgery, Gynecology, Obstetrics, July, 1921.

at operations in the Mayo Clinic between January, 1910, and July, 1920. During this time 4189 fibromyomatous uteri were removed, of which 332, or 7·9 per cent., contained adenomyomata. Dr. Mahle regards von Recklinghausen's theory of the origin of tubal adenomyomata from the Wolffian and Müllerian ducts as untenable, and considers that these tumours are the end-product of an inflammatory process. Of the 23 cases, 5 were associated with acute salpingitis, 6 with tuberculous salpingitis, 1 with hæmatosalpinx, 1 with ectopic pregnancy, and 1 with papillary carcinoma of the ovary. All the cases showed some evidence of pelvic inflammation, such as cystic ovaries or pelvic adhesions. The tumours were situated in the proximal end of the tube and isthmus, and appeared as small swellings ranging from a slight thickening of the wall of the tube to a mass 1 to 2 cm. in diameter. The process as a rule was circumscribed, though in one case it extended throughout the whole length of the tube. Twelve, or 52 per cent., of the tumours were bilateral, 7, or 30·4 per cent., were on the right side, and 4, or 17·4 per cent., were on the left. The average age of the patients was 37½ years, the eldest being 64 and the youngest 17 years. 34·7 per cent. gave a history of previous pelvic inflammation. The relation between sterility and the presence of these tumours was shown by the fact that 15 of the 23 patients had never been pregnant, 18 had never given birth to a living child, and of the 5 who had borne children only 2 had had normal pregnancies.

ARABIAN MEDICINE.

THERE are few periods of medical history more interesting or about which less is known, save by professed students, than the Arabian period or body of Arabian Medicine, by which is meant, as Dr. Edward G. Browne says in his book on this subject,[1] "that body of scientific or medical doctrine which is enshrined in books written in the Arabic language, but which is for the most part Greek in its origin, though with Indian, Persian, and Syrian accretions, and only in a very small degree the product of the Arabian mind." It is to Arabian medicine that we owe the keeping alight of the flame of scientific and medical knowledge during the interval between the decay of Greek learning—i.e., about the seventh century—and the Renaissance; for though Hippocrates and Galen had been translated into Latin as early as the sixth century, the translations disappeared, and European knowledge of Greek medicine was, during the period A.D. 700 to the fall of Constantinople, entirely derived from Latin translations of Arabic or Syrian translations from the Greek. Hence the importance of the period with which Dr. Browne's lectures deal. The golden age of Arabian learning culminated in the century between A.D. 750 and 850, under the Abbasid Caliphate at Baghdad, and about the same time the great school of Gondisapor in Persia attained its highest glory. From Gondisapor came the great translators Hunayn and Hubaish, and there, too, flourished the well-known medical family of the Bactishuas. By the labours of these translators, Hippocrates, Galen, Oribasius, Rufus of Ephesus, and Paul of Ægina were made known to the Moslem world.

In his second lecture Dr. Browne devotes himself mainly to an account of four great Persian medical men—namely, Ali ibn Rabban, Rhazes, Haly Abbas, and Avicenna. Ali ibn Rabban was the author of the Paradise of Medicine, a book which the author says contains "the greater part of what the young graduate needs of the Science of Medicine." Dr. Browne explains his use of the term "graduate" as a translation of the Arabic word *mutakharrig* by telling us that a qualifying examination in medicine did exist in the year A.D. 931, even if it did not in A.D. 850, when Ali ibn Rabban wrote. The examination was not particularly searching, as may be seen by Dr. Browne's account thereof; but after all it was but slightly easier than Mr. Roderick Random's examination for a surgeon some 800 years later. Of Rhazes and his works and writings Dr. Browne gives a most interesting account, though we are rather surprised to see that in mentioning Rhazes' well-known monograph upon small-pox and measles, and the translations thereof, he makes no mention of what we believe is the earliest English translation—namely, that by Dr. Mead, translated from the Latin in 1747. The Arabic version was sent to Mead by Boerhaave transcribed from a MS. in the University of Leyden. Mead gave this transcription to "two gentlemen of character," who produced two Latin versions, which, however, differed so much that Mead applied to Dr. Thomas Hunt, Professor of Arabic in the University of Oxford, who collated the two Latin versions with the Arabic and supplied Mead with the version which he translated. In his notice of Haly Abbas Dr. Browne quotes some excellent remarks of that physician on the importance for a medical man of regular attendance at the hospital, whereby he will reach a high degree in the art of medicine. Haly Abbas's great work was the Maliki or Liber Regius, which enjoyed great popularity, until the appearance of Avicenna's Canon, which overshadowed it. Avicenna is still, or was at least so late as 1888, held in great reverence by Persian physicians, as we know by personal experience.

Dr. Browne's third and fourth lectures are devoted to a consideration of Arabian popular medicine, medical anecdotes in Arabic and Persian literature, together with various delightful stories about Rhazes and Avicenna and the use of psycho-therapeusis. There is also a story about two court physicians whose rivalry reached to such a pitch that they agreed to a duel in which each was to take a poison supplied by his rival, the effects of which he should counteract if he could by an antidote. Accordingly, physician A gave physician B a powerful poison, which B swallowed and immediately afterwards took an antidote which he had prepared which rendered the poison innocuous. Physician B then picked a rose, breathed an incantation over it, and gave it to physician A to smell, which he did and at once fell down dead, as the poet who relates the tale says: "Fear overmastered the foe, and he gave up the ghost." Had Pope heard this tale when he wrote in the Essay on Man:

> "Or quick effluvia darting through the brain
> Die of a rose in aromatic pain"?

Lecture IV. gives an all too short account, as Dr. Browne confesses, of the brilliant civilisation in Spain and the West under Moorish domination, and of the many and admirable hospitals established throughout Moslem lands during the Middle Ages, the greatest of which was perhaps that built at Tabriz in the thirteenth century by Rashidu'd-Din-Fadlu'llah, born A.D. 1247. Many of his letters about the hospital are quoted, and the book ends with a description of the principles of Arabic medicine.

We have read the lectures with very great pleasure, and can only express a wish that Dr. Browne will follow them with an account of Moorish medicine in Spain, for the Moorish domination there during the twelfth and thirteenth centuries was marked by extraordinary intellectual brilliancy, by fostering of learning, and by a toleration of religions other than that of Islam which puts Christianity to shame.

[1] Arabian Medicine: being the FitzPatrick Lectures for 1919 and 1920. By Edward G. Browne, M.B., F.R.C.P., Sir Thomas Adams Professor of Arabic in the University of Cambridge. Cambridge: At the University Press. 1921. Pp. 138. 12*s*.

PHYSIOLOGY AND PATHOLOGY OF THE KIDNEY IN SUCKLINGS.

IN the *Wiener Medizinische Wochenschrift* of June 18th Fritz Wengraf makes a contribution to this subject. He recalls first the observations of Aschenheim and Ohlmann that in the first four months of an infant's life there obtains a peculiar metabolism as regards the salts and water—viz., that the water taken

in in four hours is only partly excreted by the kidneys, and the amount of water retained is larger when common salt is given in physiological concentration in the water. These observers concluded that there is an extra-renal delay in the transport of the salts and water. Wengraf's observations dealt with the output of all the water including the insensible perspiration, which latter was determined by repeated hourly weighings. The insensible perspiration corresponded to that of the kidneys. Breast-fed infants in general excrete in excess, whilst healthy bottle-fed infants excrete only the water (120 to 160 cm.) taken in four hours. Diuresis in breast-fed babies begins in the first hour and reaches its maximum in the second hour, while during the last two hours there is only a moderate addition to the amount excreted. In bottle-fed infants there is a steep diuretic rise usually in the second hour which reaches its maximum in three hours. The diuresis seems to be determined by the course of the hydræmia and not by the wants of the tissues. The water-excretory apparatus of a slightly dyspeptic suckling has not such control over the ingested water; the excretion curve follows the normal type, but the amount excreted is less, 30 per cent. being retained. In severe dyspeptic cases the excretion is irregular and the retention greater. In alimentary toxæmia only the insensible perspiration responds to the diuretic stimulus. The kidneys excrete no water and the retention amounts to 50 per cent., due to some renal cause. In experiments, combining common salt with the water ingested in naturally-fed children, it was found that in one-half of the cases the water taken in was excreted in four hours, in the other half 40 per cent. of the intake was retained. The urine in the former cases contained very little common salt—only 0·2 to 0·4 per cent.—a concentration greater than obtains in experiments with water alone. It is evident that the kidneys can alter the concentration. These two groups show marked variations, the one excretes the water in four hours, but retains the greater part of the sodium chloride, while the other retains both salt and water. In this latter group there is perhaps a retention of water due to extra-renal causes.

The author discusses the functional compass of the kidneys in early infancy. To determine this, experiments were made by adding common salt or urea to the food. The condition of the urine as well as the NaCl of the blood were determined. It was found that by increasing the common salt by giving one large dose of salt the percentage of salt in the blood is considerably increased, without the NaCl in the urine being in greater concentration than that in the blood. Even when large doses of urea were given, in some cases there was no corresponding urea-diuresis, and even after 24 hours the excretion of urea was not complete. Dr. Wengraf concludes that the kidneys in early infancy are capable of secreting a urine of variable concentration, but their functional compass is somewhat limited in the sense of an iso- or hyposthenuria. In the condition of hyposthenuria, in addition to an extra-renal component, there is also a renal factor. This limited functional capacity of the kidney, when the available water is diminished, as in acute dyspeptic disturbances, may play a not unimportant part in the pathology of infantile disorders of nutrition.

SHELL-FISH AND ENTERIC FEVER.

Dr. J. T. C. Nash, Medical Officer of Health for the County of Norfolk, has stated in his annual report for 1919–20 his belief that one of the main factors in the marked and continued reduction in the incidence of enteric fever in England during the present century has been the persistent warfare on "boiled" cockles from polluted layings which he initiated in the opening years of the century when medical officer of health for Southend.[1] At that time, although raw shell-fish were already under suspicion, it was thought that the boiling of cockles rendered them harmless; but he demonstrated that "boiled" cockles from polluted layings gave rise to many cases of typhoid fever, and that the so-called boiling was not real boiling, the heat employed only being sufficient to kill the cockles and open the shells. He found on cutting into "boiled" cockles riddled through a sieve that the interior contents were uncooked and barely warm, the internal temperature being below the thermal death-point of typhoid bacteria. It was a remarkable fact that from the time the "cocklers" could be prevailed upon to cease from laying the cockles in grossly polluted creeks, and, further, to sterilise them by prolonged steaming,[2] the incidence of typhoid fever fell extremely rapidly, not only in Southend, but also in London and other large towns to which the so-called "boiled" cockles were sent in large numbers. A certain number of cases of enteric fever have also been traced to the contamination of small flat fish, such as dabs, which are often caught near sewers, and being too small to be gutted, are eaten entire after cooking insufficient to sterilise the gut contents. Dr. Nash also formulated a theory that infection might be conveyed from shell-fish gathered in polluted waters to other fish on the same stall by the hands of the fishmonger. He noted several instances of infection amongst cooks under circumstances where no other member of the household contracted typhoid; in each case the cook had handled and gutted the raw fish, which other persons ate after it had been boiled or fried in oil or grease. Although emphasising the rarity of such means of infection, he believed that this was undoubtedly one way by which not only typhoid but cholera and other allied diseases were spread.[3] Their diminished incidence affords satisfactory evidence of the safeguarding of a popular foodstuff.

[1] THE LANCET, 1903, ii., 1533, and 1906, ii., 836.

ARTERIAL HYPERTENSION AND CHRONIC NEPHRITIS.

ARTERIAL hypertension is a manifestation of chronic nephritis, and at the same time persistent hypertension may occur without the presence or subsequent development of chronic nephritis. This fact has been recognised clinically by the adoption of the term hyperpiesia, a term introduced by Sir Clifford Allbutt for those cases of maintained high blood pressure in which there is no evidence of kidney disease. Clinical evidence of kidney disease is not always easy to obtain in the earlier stages of chronic nephritis, and it is sometimes absent during irregular intervals in the later course of this disease. In recent years clinical evidence has been supplemented by certain functional tests of renal efficiency, and also by the micro-chemical examination of the blood. It has been shown by a number of workers, particularly in France, America, and in this country, that a retention of sugar and non-protein nitrogen occurs in many cases of severe nephritis, and in some forms of kidney disease an increase of non-protein nitrogen in the blood may be apparent at a relatively early stage. It would appear that uric acid retention makes its appearance before urea retention, while creatinine retention does not occur until the later stages of the disease. It might be expected that the application of these methods of blood examination to cases of arterial hypertension would throw a sure light on the question of coincident nephritis, but unfortunately other conditions than kidney disease lead to uric acid and urea retention in the blood. Heart failure with passive congestion in the kidneys is the most important cause of urea retention that is not due to nephritis, while gout is a cause of uric acid retention though it is uncertain as yet how far the commonly associated nephritis is here responsible for the increase of uric acid in this disease. J. Lisle Williams[4] has recently reported his results from the examination

[2] Ibid., 1905, ii., 369.
[3] Ibid., 1910, ii., 1306.
[4] Archives of Internal Medicine, June 15th, 1921.

of the total non-protein nitrogen constituents of the blood in 55 patients with arterial hypertension in whom there was no clinical evidence of nephritis. He comes to the conclusion that there is a disease, arterial hypertension, which when uncomplicated by nephritis or cardiac decompensation gives no functional evidence of kidney insufficiency, and that the height of the blood pressure bears no relation to the amount of non-protein nitrogen substances in the blood. In short, the application of micro-chemical methods of blood examination to certain cases of arterial hypertension fails to convict these cases of chronic nephritis, and in the meantime they may be properly classed under the rubric of hyperpiesia. In any serious attempt to investigate the non-protein nitrogen content of the blood in hyperpiesia, such conditions as chronic nephritis, heart failure, gout, diabetes, and malignant disease must be excluded, since these diseases are known to influence the non-protein nitrogen in the blood. Yet the 55 patients examined by Dr. Williams had only one clinical feature in common—namely, hypertension—and in other respects form a motley group. Though it is stated at the outset that his patients had no clinical evidence of nephritis, in a later paragraph he speaks of evidence in some of the cases of renal impairment, and a significant proportion were clinically diagnosed as chronic nephritis; there are also included cardio-renal cases, patients with heart failure, arterio-sclerosis, tertiary syphilis, diabetes, cirrhosis of the liver, gout, and chronic arthritis. The subject is one of considerable difficulty. Arterial hypertension is not a disease, though it may be a sign of disease, and for the elucidation of the problems it presents uncomplicated cases should be selected for investigation. Further, it is not statistics of 50 or 100 cases that are required so much as detailed clinical records of single cases combined with adequate records of renal function tests and blood analyses, followed, if possible, over a period of years, and finally completed by post-mortem examination with the application of modern histological methods.

X RAY TREATMENT OF ENLARGED TONSILS.

CHRONIC hypertrophy of the tonsils is a condition which has excited little interest in medical circles except among the few, and has been the subject of active interference rather than pathological study. Probably this is because the disease is so common and the material available for investigation so abundant, for it is always the minor malady which is regarded as inevitable and as offering but a limited field for research. We should hesitate to hazard a guess as to the proportion of tonsils removed by operation which are submitted to microscopic examination, but it must be surprisingly small, among quite the minor decimals. Nevertheless, the condition seems to merit more careful consideration. In the *Archives of Internal Medicine* for June, Dr. Carl Vernon Weller records the results of the routine histological examination of tonsils removed by operation from patients of either sex and varying age. Nearly 9000 consecutive cases were examined, and of these 2·35 per cent. were found to be tuberculous. The incidence of tuberculosis in the tonsil is about equal in the two sexes, but it is particularly high in institutions for the care of children, and among nurses, students, and interns in hospitals. In children the organism is usually of the bovine type, and this probably explains the type of tissue reaction found, for this is essentially chronic, and caseation is rare. In adults the infection is more commonly of the human variety, as anyone would suppose who has examined his nasal secretion after a morning spent in the routine clinical investigation of phthisical patients.

Another aspect of the subject is dealt with by Dr. James Murphy and his collaborators in the *Journal of Experimental Medicine* for the same month. It is established that X rays have a selective destructive action on lymphoid tissue, and the authors have utilised this knowledge in the treatment of enlarged tonsils. With carefully graduated doses of rays they have brought about shrinkage of the tonsils and eversion of the crypts, with emptying of their septic contents. The cure thus brought about is apparently permanent, and the treatment may safely be applied to the ordinary chronic septic tonsil, since the infection is limited to the crypts which, on account of the shrinkage of the lymphadenoid tissue, appear to be mechanically everted and drained. Whether this treatment is equally suitable for tuberculosis of the tonsil is another matter. It is true that, according to Dr. Weller, some 60 per cent. of tuberculous infections of the tonsil are crypt infections, with no involvement of the lymph follicles themselves, but inasmuch as the lymphocyte appears to be particularly concerned in the tissue reaction to the tubercle bacillus, the wisdom of destroying it may be open to question. This point will, no doubt, be settled by further work, and in the meantime it is satisfactory to learn of a method of treatment which appears to have considerable advantage over the usual surgical procedures.

THE MODE OF ACTION OF KAOLIN.

THE successful use of kaolin in the treatment of cases of Asiatic cholera, described by Dr. R. R. Walker in our present issue, is of great interest, although, as Sir Leonard Rogers pointed out at the meeting when the paper was read, the results cannot be regarded as quite conclusive in view of the comparatively small number of cases treated. Dr. Walker explained at the time that when administered by mouth kaolin was inert and insoluble and did not pass into the circulation. He attributes great importance to the action of kaolin in removing toxins, and the possible value of the drug in bacillary dysentery is not escaping attention. It is necessary to consider the fundamental chemical details concerned in Dr. Walker's experiments to arrive at a tentative explanation of the action of kaolin. Proteins, which consist of a "mixture" of 18 to 20 amino acids, are acted upon by bacteria in various ways; in the case of putrefaction, amines may be produced by the loss of carbon dioxide from the amino acid. Except histamine from histidine, tyramine from tyrosine, and indol-ethylamine from tryptophane these amines are not very toxic. The toxicity of histamine and the rest is not comparable with the toxicity of the real bacterial toxins, and it is probable that these are more complex protein derivatives of the nature of a polypeptide or simple peptone, containing in its molecule one of the toxic amines, in cholera perhaps indol-ethylamine. Cholera vibrios are identified amongst other tests by the "indol" reaction—i.e., by the production of indol itself or some simple indol derivative from tryptophane. Indol and its simple derivatives, such as indol-acetic acid, which have a slight toxic action, are not absorbed by kaolin, but the complex toxin is absorbed. The absorption probably occurs by the mutual precipitation of oppositely charged colloids, the kaolin and polypeptide. The actual effect of the kaolin in the intestine is thus most likely to be one of adsorption. For a mechanical action it would be necessary to conceive the whole of the absorbing mucous membrane of the intestine being covered by the kaolin so as to prevent the passage of the poison.

Sir Ernest Hodder-Williams, C.V.O., has been appointed a Knight of Grace of the Order of St. John of Jerusalem in England, and Dr. James Woodward Riley has been appointed an Esquire of the Order.

INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C.2.

SECOND CONFERENCE OF THE INTERNATIONAL UNION AGAINST TUBERCULOSIS.

ON the initiative of the National Association for the Prevention of Tuberculosis, a large and representative gathering assembled at the Second International Congress, held in the large hall of the Institution of Civil Engineers, Westminster, on July 26th, 27th, and 28th, under the presidency of Sir ROBERT PHILIP. Delegates were present from 39 countries, including France, the United States, Japan, Sweden, Denmark, China, Australia, New Zealand, Canada, Finland, Poland, South Africa, Switzerland, and Czecko-Slovakia. Lord CURZON and Sir ALFRED MOND welcomed the delegates on behalf of His Majesty's Government.

TUESDAY, JULY 26TH.

Official Welcome.

Lord CURZON said it had been shown that where tuberculosis could be scientifically assailed it could be systematically defeated. The coördination of all the present sporadic efforts at dealing with the scourge was a condition essential to success on a large scale. Much might still be expected from the prosecution of scientific research. Lastly, it was imperative to conduct a vigorous educational propaganda among the people.

Sir ALFRED MOND epitomised the steps taken in this country to combat tuberculosis in recent years. The national scheme for prevention and treatment of tuberculosis inaugurated in 1912 provided for sanatorium benefit for insured sufferers, including domiciliary and institutional treatment. This represented the beginning of a great national effort to deal with a disease, to which, owing to our peculiar climate, we seemed especially liable. Since the armistice progress in the campaign had been resumed. We had three main elements in the scheme of institutional treatment: (1) the tuberculosis officer, (2) the dispensary, (3) the sanatorium, which was intended for residential accommodation. There were 341 tuberculosis officers, 412 tuberculosis dispensaries, and 18,050 beds for tuberculous patients, an increase in the last two years of 4000 beds. There were now in progress additional buildings which would provide 3500 more beds in the next two years. The question of the ultimate value of the sanatorium was still a discussable one among experts. Five hundred places were being provided by the Government at selected sanatoriums for the training of ex-Service men. A village settlement was in course of development at Tetworth, in Cambridgeshire, where a certain number of patients would be able to take up their residence with their families, and 20 men were already in occupation. At Preston Hall, Kent, a similar effort would be made. The idea was to put and keep these men in such surroundings as would safeguard against a relapse, or a reinfection of the disease. Probably in every country the aftermath of war would keep purse-strings tight, but it was satisfactory to note the striking progress made since 1914. In 1914 there were 99,000 notified cases of tuberculosis and 50,000 deaths. In the following year 90,000 cases were notified and 54,000 deaths; but 1919 showed a reduction to 77,000 cases and 46,000 deaths, the corresponding figures for 1920 being 73,000 and 42,000. Bearing in mind the interruption brought about by the war, those figures were very striking.

Short speeches promising support to the crusade in their respective countries followed from 26 delegates, mostly delivered in excellent English.

Senator ANDRÉ HONNORAT, representing France, read a contribution, in French, in which he said that, next to the war, tuberculosis proved the most drastic decimating agency among the young men of his country. He outlined the measures already taken and in contemplation for combating the disease.

Fundamentals of Pathology.

Colonel G. E. BUSHNELL (U.S.M.C.) submitted a paper containing a general review of the subject. Both diagnosis and the measures to be adopted depended on a correct interpretation of the disease processes at work. At present, despite all the advances which had been made, there was still lacking a general agreement as to fundamentals in regard to the pathology. Tuberculosis was pre-eminently an insidious disease, and as in most disease conditions, treatment was most hopeful in the early stages, hence the von Pirquet reaction ranked, in his opinion, second in importance only to Koch's discovery of the bacillus. Tuberculous infection was not necessarily identical with tuberculous disease. Very few people escaped the invasion of so widespread a contamination, but only a proportion failed to throw it off—i.e., they did not manifest the disease. Physical diagnosis gave the key to infection which had overcome the body resistance. The lesion found in the tuberculous patient was seldom his initial lesion. We did not yet know how far tuberculisation of the race was accompanied by lung lesions; 86,000 French soldiers fell victims to tuberculosis while under military service. There must, he contended, be a closer study of the nature of the thickening often found in the upper lobes of the lungs. Epidemiological questions could only be solved by a long process of research, and this the physician could not be expected to undertake unaided. Especially should investigation be made among people who were apparently well. Tuberculosis alone among common diseases received but scant consideration at the hands of most of the population, and in many cases even inflammatory reactions passed unnoticed. Some people, however much exposed to the disease and however bad the conditions they lived in, did not get the disease. The difference was not due to bad air, or bad food, or bad hygiene, or overwork, or race or climate. To say it was a matter of predisposition was only to confess our ignorance. The study of this disease should be prolonged beyond the period usual with investigators, and beyond what was possible to any single body. It must be in the hands of a governing body which could initiate a universal campaign, which should have no limitations, and should have the power to loosen the purse-strings. In other words, there must be coöperative activity in combating this disease, but every effort should be made to come to an agreement on fundamentals.

Sir ARTHUR STANLEY intimated that the Prince of Wales had signified his acceptance of the post of President of the National Council for the Prevention of Tuberculosis, rendered vacant by the death of Lord Balfour of Burleigh.

On Tuesday afternoon the business meeting of the National Council was held. Sir ARTHUR STANLEY occupied the chair, and in a short speech said he felt that in this campaign they were on the winning side.

The "Œuvre Grancher" System.

Dr. P. F. ARMAND-DELILLE (Paris) read a paper on this system, which had now been in operation 17 years. The gravity of infection by tubercle depended on the dosage of bacilli received. If a guinea-pig received 10 tubercle bacilli at a time it developed the disease, but not if there were only 2 or 3. A child might have a slight tuberculous contamination from the dust of cities and present a positive von Pirquet, but might not develop tuberculous lesions; but if kept in close proximity to a tuberculous parent was found to have a primary ganglionic focus of the disease. The Grancher system consisted in placing out in healthy rural families children whose lives were in jeopardy through living with tuberculous members of the family. The children must previously have been vaccinated against small-pox, and be free from adenoids. Of 2300 children of Paris so placed, only 7 developed tuberculosis, and there were 2 deaths from meningitis three weeks after being transferred. This meant practically the extermination of the disease among children. There were now more than

20 branches, and it was hoped to have one in each of the 89 Departments, as the Government gave a large grant to the work.

A Hastings delegate said the system had been tried in his district with great success for some years. He did not know of a single failure.

Sir ROBERT PHILIP said the system was sound.

In the evening a reception was held by the LORD MAYOR of LONDON at the Mansion House.

WEDNESDAY, JULY 27TH.

On Wednesday morning the Conference discussed the subject

The Modes of Diffusion of Tuberculosis throughout the Races of the World.

Prof. J. CALMETTE (Pasteur Institute, Paris) read a paper in introducing the discussion, in which he said that since 1908 certain diagnostic methods had enabled the bacillus of tubercle to be detected in the human body even in the absence of clinically ascertainable lesions, and this had made possible a general survey of populations and the ascertaining of what proportion were infected with the disease. The most practical method to date was that of von Pirquet, of Vienna—i.e., two slight skin abrasions over the deltoid and the introduction of a small drop of tuberculin, either pure or in a 1-in-10 dilution. The postitive indication was the occurrence of a papule at the site of scarification in 10 to 24 hours. After remaining 5 or 6 days it completely disappeared. Before the war it was found that in certain countries tuberculosis was either absent or very rare, such as in Equatorial Africa among tribes where civilisation had not been introduced. But in cities and civilised comm nities of all climates the disease was very prevalent. Statistics showed that tuberculosis among the civilised nations of the world gave an average of 12 per cent. of deaths, and in the most favoured countries—Belgium, Italy, Portugal, Spain—the figure was 7·4 per cent. of deaths. As to the proportion of people in very large cities who showed a positive infection, as contrasted with having the established disease, 20 per cent. of the children were found to be infected at 2 years of age, 55 per cent. at 5 years, 90 per cent. above 15 years, while 97 per cent. of adults gave a positive reaction to tuberculin! In the country districts tested the figures were very much lower. In countries possessing many races there were marked differences in attack-rates, probably due to the length of time the disease had been implanted in them, and to some extent referable to the habits of life. Peoples who had been longest isolated from the disease proved to be the most susceptible to it when brought into infected communities. Civilised races, on the other hand, were more resistant owing to the comparative immunisation due to long infection. "In man, therefore, tuberculosis results from his civilisation." The same was true of cattle. The spread of tuberculous infection throughout the world was due to disseminators of virulent bacilli, who were often apparently healthy carriers. It had been shown by the author that bacilli injected into the blood stream were eliminated through the bile passages. The author quoted a number of independent investigations by other workers which established the same fact. Titze had shown that when tubercle bacilli were injected intravenously into a lactating cow they began to appear in the milk towards the third week. Carriers of tuberculosis who were apparently healthy might have lesions limited to a few glands, and from these be continually infecting new subjects. Protection of children and the general population in countries comparatively free from the disease could only be contemplated on the condition of reorganising a system of detection based on the judicious use of tuberculin tests and a clinical examination of the glandular system, based mainly on radioscopy.

Bovine Form of Infection.

Sir G. SIMS WOODHEAD (Cambridge) spoke on the diffusion of tuberculosis in the human subject through infection with the bovine form of the bacillus. It was clear that geographical considerations had much to do with the arguments brought forward with regard to the spread of tuberculosis. In Japan, for instance, the bacillus of the human type played a much more important part in the process of infection than it did in Edinburgh. At an early stage of the inquiry 30 per cent. of the cattle in Edinburgh dairies were found to be tuberculous, and in 16 per cent. of the samples of milk being distributed to certain areas tubercle bacilli were found, often in considerable numbers. A large number of the children who died from tuberculosis had the disease in the mesenteric glands or the meninges. He spoke of the means by which the tubercle bacilli could pass from the general circulation of the cow to the mammary gland, and so infect the milk. From 6½ to 10 per cent. of the fatal cases of tuberculosis were the result of bovine infection, and this form showed a predilection for lymphatic glands. He concluded by an appeal to continue the campaign against tuberculosis, urging his hearers not to allow this matter to be brought within the r i lit of the present desire for financial economy.

Dr. GERALD B. WEBB (Colorado Springs) emphasised the family factor, and the importance of close family contact as a disseminator. In many cases a parent, before he manifested signs of the disease, had been a carrier sufficiently long to spread millions of bacilli to those in his immediate surroundings.

Experience Abroad.

Prof. F. HARBITZ (Christiania) spoke of the different racial incidence in the Norwegian territory. In the northern part the mortality from the disease which in 1871 was 2·2 per 1000, rose in 1901 to 4·2. In another part lupus increased from 3 to 5 per 1000. The high incidence rate among the Lapps was due to their being an inferior race.

Prof. L. T. R. HUTCHINSON (Bombay) said tuberculosis was very widely spread in India. In one of the divisions of the country, with a population of 20 millions the death-rate was 89 per 100,000 of the population. In rural areas it was 63, in urban areas 223, in certain towns mounting as high as 700. The figures for a few towns showed 84 per cent. of the deaths were due to the pulmonary form of the disease, 16 per cent. to other forms. He had seen very little evidence of bovine tuberculosis in that country; and the slaughter-house returns with which he was acquainted showed only one case of advanced bovine tuberculosis. In India the family factor was of very great importance. The common type of building for the very poor was the one-room tenement, which was so dark that an artificial light was required in the day-time. The whole family lived in one room, and expectoration was universal. The emigration from the villages to factory towns to work and the return to the home life at intervals was a very important factor in the rapid spread of tuberculosis in that country, and the zenana system was responsible for the greater prevalence among women.

Colonel BUSHNELL averred that if tuberculin were appealed to to say whether a person had the disease it gave a very dubious answer; but it gave much more reliable information if used undiluted. There were cases, however, which did not react to even pure tuberculin. In one instance 100 men in the American Army were examined with tuberculin, and, ultimately, all reacted to tuberculin, though one required as much as 20 mg. of tuberculin subcutaneously to react, which simply meant he had acquired the most effective immunisation. Generally, the fewer the cases of the disease in a community the higher the death-rate among the attacked. A question which ought to be settled as soon as possible was whether a people who did not react readily to tuberculin was likely to die quickly from the disease when they did fall victims to it. He urged that concentration should be bestowed on recent cases of the disease, giving them every care and attention, and see what happened to them in six months. More would be done towards eradicating the disease by

attention directed to the children in this way than bestowing energy on tuberculosis dispensaries for established cases.

The discussion was continued into the afternoon.

Sir GEORGE MCCRAE (Scottish Board of Health) spoke of the work done in Scotland in this respect, referring to the farm colony established by the President (Sir Robert Philip), and to the fact that when the National Insurance Act became law, Scotland had all the machinery ready, and 60 per cent. of the local authorities had adopted notification of the disease. In that country to-day there were 101 sanatoriums and other institutions, comprising 3232 beds actually in use, apart from accommodation for other diseases. The deaths from the disease of all forms in the country were in 1919 6326, as against 8517 in 1910. In Scotland they recognised the great importance of housing in this matter, for bad houses were the greatest barrier to progress, and the housing in that country was deplorable.

Further Discussion of Ætiological Factors.

Prof. S. LYLE CUMMINS, representing Great Britain, paid a warm tribute to the great work done in connexion with this combat by the French, and said the contribution just delivered to the Conference by Prof. Calmette was one he did not expect to hear surpassed. When tuberculosis attacked a fresh people it conformed to all the behaviour of an acute infectious disease, but not among victims in a people already subject to it. He spoke of the lessons in this regard afforded by the disease among the various constituent peoples taking part in the war. It supplied the reason why our army supplied a long pension list instead of a high death-rate from the disease; and he put in a plea on behalf of the ex-soldier the true nature of whose disease was not early recognised, but who was eventually found to have tuberculosis.

Dr. J. H. LANDIS (Cincinnati) contended that the discussion had served to confirm the impression that the ætiology of tuberculosis was the part of the subject about which least was known. Some contended that at whatever age the disease might manifest itself it was the outcome of an infection acquired quite early in life, and that infection late in life seldom occurred. But the speaker considered that adult infection took place oftener than was usually thought. In the United States the black race showed double the death-rate of that of the white people.

Dr. L. G. HAYDON (Pretoria) spoke of the great influence in the spread of tubercle exerted detrimentally by the incursion of kraal village inhabitants (constituting the mass) to centres of industry where they came into contact with infected civilised people, and their periodic return to their homes. These cases he agreed were rapidly progressive and fatal, and the direct means of spread was by expectoration, aided, he did not doubt, by Indian hemp smoking.

Dr. H. SUTHERLAND (Ministry of Pensions) outlined the policy of the Ministry in regard to tuberculous ex-soldiers, and those who were subsequently found to have that disease.

Dr. W. CAMAC WILKINSON (London) referred to work in Australia in connexion with this disease, and averred his belief in the efficacy of tuberculin. He emphasised his view that generalisations about the pathology of the disease should be founded on nothing less than post-mortem examination. The von Pirquet method was unreliable for diagnosis, as it was too sensitive; there should be subcutaneous injection of tuberculin, and if that was positive it was proof of the presence in the body of living active tubercle bacilli.

Dr. CH. RIST (Paris) said that if a child having consumptive parents was removed from them in early life and brought up in non-infectious surroundings, he would not only not be likely to develop the disease, but the incidence rate among such would be lower than among the general population. The high susceptibility of certain races was due to the disease not having been experienced in childhood; this received ample emphasis in the war in the case of black contingents. He believed hereditary predisposition played some part in the production of the disease, but not to the extent usually supposed. He combated the idea that physical robustness necessarily meant good resistance to tubercle; and he instanced a family which lived in ideal conditions and a hygienic life, but the children of which died rapidly of tubercle. Also it was clear that the Irish were more, and the Italians less, susceptible to the disease than the commonality of people. He agreed with those who denied to the von Pirquet reaction a practical diagnostic value. If that fact were generally recognised it would save much disappointment.

Dr. H. HYSLOP THOMSON (M.O.H. Hertford) spoke of the prevalence of tuberculosis among the mentally-defective and feeble-minded. In a large institution with which he was connected, the death-rate from the disease in 1914 was 20 per 1000, and during the war that figure rose to 118. The clinical manifestations of the disease among these patients differed markedly from those in ordinary folk in the fact that there was no cough and no sputum and the chief lesions were intestinal. There was a field here for an instructive investigation.

THURSDAY, JULY 28TH.

The Rôle of the Medical Profession in the Prevention of Tuberculosis.

The last open session of the Conference was devoted to this aspect of the subject, and was remarkable for two important contributions, from Sir Humphry Rolleston and Sir George Newman, which were followed by a good discussion.

Sir HUMPHRY ROLLESTON said the isolation of all carriers of the bacilli would be effective only if adopted in the stage before the discharge of such bacilli from the individual. If all latent cases were detectable by the von Pirquet test, 90 per cent. to 95 per cent. of urban populations and an enormous number of cattle would prove to be infected. Krause had said that tuberculosis was the price we paid for our civilisation. The Tuberculosis Order of 1912–13 should be revived as soon as possible; this was asked by the National Council for the Prevention of Tuberculosis at its meeting last year. Small doses of the infection in early life probably conferred some degree of immunity; the danger lay in mass infections. Periodic examination of children every six months by the method of Calmette would be of great service in detecting the onset of infection. The test should be applied to a selected area without delay. The question of general hygiene could not be separated from this campaign; improved sanitary and physiological conditions, proper housing, good feeding, healthy and not excessive work, suppression of alcoholism and venereal infection were essential for the prevention of diseases, of which tuberculosis was the commonest. Medical men were in a position to diminish and prevent infection, to improve the resistance of the people by securing healthy surroundings, proper feeding and occupation, and to promote the education of the masses in matters of hygiene. The doctor could take part in the prevention of the disease by teaching students and by helping on research. He constituted the first line of defence against all diseases; he was acquainted with the life-history and physical condition of the members of the families who came under his care, and he had an unequalled opportunity of educating them in the laws of physiological righteousness. This was the more important as patients did not usually seek advice until disease had become definitely established. Teachers in medical schools had a great responsibility in forming the outlook of the future general practitioner in regard to this disease. But few medical schools in this country gave a systematic course of instruction in tuberculosis, in which early diagnosis should receive special emphasis. There was also need for the creation of University chairs in Tuberculosis, such as those in Edinburgh and Wales. And

the doctor was important, too, as leader or adviser of the general public on these matters, and particularly hygiene. The bad effect of syphilis in reducing the resistance to tuberculosis could not be too much emphasised, and fuller statistics on this point must be very useful. Alcohol likewise favoured the onset of the disease, and prohibition of alcohol would greatly diminish the death-rate and the incidence rate of tuberculosis. Lastly, he counselled active propaganda work among the public, without whose aid very material progress was not to be expected.

State Action in Preventing the Disease.

Sir GEORGE NEWMAN said the magnitude and character of the tuberculosis problem was such that it affected not the sick man only, but the well-being of the nation as a whole. Tuberculosis cut off human life in its adolescence and adult prime, and before death there was an average of three years of sickness and incapacitation, and it was responsible for a large body of pauperism. Its ravages were worst among the poor and in congested areas. He emphasised the hygienic factors. There was need for coördination by the State in the anti-tuberculosis campaign; for without this sporadic efforts were without their due effect. Especially did the State need to see that the public were educated on the question, and this instruction should begin early in life. This intervention by the State must be both central and local, and nothing must be left to chance; all the verities of science must be utilised in the campaign, but there must be willing coöperation on the part of the people. In 1847 there died from phthisis (excluding miliary tuberculosis) 3189 persons per million of the living. In 1872 it had fallen to 1356, and in 1913 to 916. In 1920 there was a further fall to 842 per million, a reduction on the 1847 figure of 74 per cent. In that period there had been great progress in both sanitary reform and the education of the people in health matters. Together these pointed the way to future conquests. It was a great fallacy to believe that such a protean disease could be conquered by any single method. He spoke very highly of Mr. Lloyd George's National Health Insurance Act of 1911, which he regarded as one of the most epoch-making Acts ever passed by any Government. He mentioned with approval, too, the housing and public health and factory legislation; also those concerning measles, influenza, and lobar pneumonia and child welfare. And Governments could do very much in the prevention of tuberculosis by the hygienic control of food and drink, especially by restricting the excessive consumption of alcoholic beverages. He had no doubt that sobriety in a nation tended to engender a non-tuberculous people. There was particular need to attack this problem at its source—i.e., the patient's home—and he referred to the President's effort in Edinburgh in 1887, and the Departmental Committee of 1912, under the chairmanship of Viscount Astor. Sanatorium benefit came into force in July, 1912. Notification of the disease was now an established measure in most countries, also prohibition of spitting in public places, and many nations were carrying on propaganda work. The Departmental Committee to which Sir George Newman had referred, said the tuberculosis dispensary should serve as (1) receiving house and centre for diagnosis; (2) clearing house and centre of observation; (3) centre for curative treatment; (4) centre for the examination of contacts; (5) centre for "after-care"; (6) information bureau and education centre. One dispensary was suggested for every 150,000 of the population in urban areas, and the Committee laid stress on the importance in the success of such that they should have the hearty coöperation of general practitioners, who had intimate personal relations with patients and much influence in the homes of the people, forces which were very valuable in this campaign. Wherever research work had been pursued, the crucial issue of immunisation remained the supreme objective. In conclusion, he said that only by surveying this complex problem in the spirit of preventive medicine, and coördinating the respective factors concerned, and finding the hidden secrets of immunisation, would the disease at last be conquered.

The Responsibility of the Practitioner.

Prof. C. E. A. WINSLOW (Yale) said that in America only 25 per cent. of the cases were cured in the sanatoriums; but the average practitioner, especially in country districts, was not always a successful diagnostician. There was need for expert consultants to act in conjuction with private physicians.

Dr. CAWADIA (Athens) urged that medical men, not political authorities, should have questions of this sort under control, that the medical services needed control, and that special courses on tuberculosis should be given at the universities.

Dr. RIST said the first duty of the practitioner of medicine was to be a good diagnostician. The need for that was seriously felt in the war, when large numbers of men wrongly said to be tuberculous were sent to the base or to their own homes, when the need of men in the fighting areas was urgent. He referred with satisfaction to the inquiry by the London County Council, who found that 75 per cent. of so-called cases of tuberculosis had not that disease at all.

Colonel BUSHNELL agreed that the mass of medical men must be interested in this subject. He feared there was a decline of keenness in making physical diagnoses, and that the medical student wished to specialise too soon. More attention ought to be devoted to the normal chest, and the recognition of early tuberculosis should not be relegated to the expert.

Dr. ANTONIO ESPINA Y CAPO (Spain) said the social work in this crusade should include medical participation in the drawing up of an international anti-tuberculosis law, measures of prophylaxis directed against germ-carriers, a study of the married state in this relation, and international forms of notification.

Prof. G. E. GASK (London) considered that the medical profession as a whole had failed in its duties in regard to the prevention of tuberculosis. It was known that it was a preventable disease, and how it could be prevented, but doctors were not by any means sufficiently insisting on all possible occasions that the necessary steps should be taken. His own view was that ten times as much as at present could be done.

Dr. M. JAQUEROD (Leysin) spoke specially of the danger of promiscuous spitting, and the need for a more enlightened hygiene.

Prof. HARBITZ pleaded for exact information concerning the use of tuberculin and its results, and that the profession should suggest laws aimed at preventing the spread of the disease, and bringing a general knowledge on the laws of hygiene into the people's homes.

Dr. C. L. MINOR (Asheville, N.C.) advocated a more thorough and intimate study of the disease in medical schools, enabling clear and practical conclusions to be drawn. Doctors should be ready and prepared to apply the *verified* new discoveries.

Prof. J. C. MEAKINS (Canada) also emphasised the function of the general practitioner in this work, and urged a careful study of the effects of fatigue and general conditions on the sensitiveness of the individual to tuberculin, and therefore to the disease. He did not think the present-day eight hours leisure was utilised sufficiently for recreation: too large a proportion of it was given to the cinema.

Beginning with the Baby.

Dr. ERIC PRITCHARD said that in order to get a population resistant to tubercle, the baby should be commenced with. During the last ten years he had been trying to secure immunity in children who otherwise must inevitably have been contaminated, and of 30 children so treated there had so far been no deaths. If a child was born of a tuberculous mother he did his best to get the mother to nurse the

child, because he thought this imparted some passive immunity. At the earliest opportunity he gave a diagnostic injection of Koch's old tuberculin. If there was a reaction, he concluded that the child had already been tuberculised by the mother, and he continued with increasing doses until he got to a dose of a milligram. This required five months, and during that time the child went on well. If the mother had open tuberculosis the infant became tuberculised soon after birth. He advocated the systematic sending of such children to tuberculosis dispensaries, where they could have the kind of treatment he had carried out.

The PRESIDENT expressed his appreciation of the help being given by the Press, and Dr. MINOR voiced the gratitude of the delegates from abroad for the kindly reception and entertainment accorded them.

The Conference then closed.

During Friday visits were paid to a number of sanatoriums and hospitals, and on Tuesday international delegates were entertained at luncheon by the Government.

TREATMENT AND EDUCATION OF PHYSICALLY DEFECTIVE CHILDREN:

CONFERENCE AT NEWCASTLE-ON-TYNE.

A JOINT Conference arranged by the Newcastle Invalid Children's Aid Association and the Central Committee for the Care of Cripples was held at the Royal Victoria Infirmary, Newcastle-on-Tyne, on July 19th. Both morning and afternoon meetings were well attended. Lady PARSONS took the chair at the morning session, which was first addressed by Prof. RUTHERFORD MORISON, who, in opening, estimated that there exist three cripples for every 1000 of the population, and that at this rate there are 1500 cripples in Newcastle and Gateshead. Of this crippling 40 per cent. is due to tuberculosis and 26 per cent. to infantile paralysis. Prof. Morison emphasised the importance of prevention, instancing what has been done in other diseases, and claimed that with preventive measures and adequate early treatment three-quarters of the crippling could be prevented. He also called attention to the psychology of the cripple, how he is apt to be singled out by the healthy boy or girl as a subject for persecution and contempt, and how this and his difficulties in the struggle of life are apt to sour him and to make him morose. Prof. Morison mentioned the existence of a home for crippled children in Gosforth, associated with the name of Mr. Sanderson. This, until lately, had been a home and a school, but no surgical treatment had been carried out; lately, however, arrangements have been made for operative treatment to be carried out at another institution, and it is hoped to make the home a centre for both education and treatment of cripples.

Mr. R. C. ELMSLIE related his experience of the progress that has been made in the surgical and educational care of crippled children in London during the last 12 years; better coöperation between the schools and hospitals and increased provision for tuberculous children had resulted in much improvement in the condition of the children, but much still remained to be done, more particularly for children with infantile paralysis. Surgeons are still obliged to do a great deal of work in the out-patient department that can only be really efficiently carried out if the children are in an institution. Speaking of the education of cripples, Mr. Elmslie pointed out that every cripple must eventually compete in the labour market with healthy rivals, and unless he has been educated and taught a trade his position is hopeless. In his opinion no institution has any right to keep in crippled children for prolonged surgical or other treatment without arranging for their education, nor to keep them in and educate and clothe them without arranging for adequate treatment.

Mr. H. PLATT, relating experiences from visits to America, pointed out that the chief difference in that country is due to the much larger number of American surgeons who have relinquished other branches of surgery in order to devote themselves to orthopædics. In most of the medical schools and universities in America there is a chair of orthopædics, and there are far more hospital beds given up to the work than there are in this country.

Afternoon Session.

In the afternoon, under the chairmanship of Sir THEODORE MORISON, Mr. JOHN FRASER was the principal speaker. Mr. Fraser devoted himself chiefly to the prevention of tuberculosis, pointing out that attention to a few simple measures might do much. The measures advocated were: (1) Preventing a child during early years from coming into contact with persons suffering from open tuberculosis; (2) attention to the hygiene of the child's mouth and throat; (3) boiling milk; (4) special care of a child after an attack of measles, whooping cough, &c., when there is an undoubted increased liability to tuberculous infection.

After an active discussion the following resolutions were unanimously adopted:—

1. That this Conference is of opinion that a local branch of the Invalid Children's Aid Association should be formed with the following objects: (1) The procuring of all available means of assistance, care, and education; (2) the keeping of records; (3) the discovery of early cases of crippling disease.

2. That hospital school accommodation is most urgently needed now, and should be provided at the earliest possible date.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Deaths of Eminent Physicians.

WITHIN the last few weeks the medical faculty of the Vienna University has sustained the loss of several of its most esteemed members, who were responsible to a great degree for the high position held by Vienna in the scientific world. Amongst the best known was Prof. V. von Urbantschitsch,[1] the successor of Politzer as head of the otological clinic. Although in no way as eminent as his predecessor, he was an excellent teacher; to his efforts are due the recognition and treatment of deafness as a social disease. He was the instigator of the Union "Vox," which endeavours to unite the deaf and to alleviate their condition by promoting instruction in lip-reading and testing all apparatus designed as an aid to hearing. As a result of the war the number of deaf persons has largely increased; many of them owe a great debt of gratitude to Urbantschitsch for the help obtained through his initiative. He carried out original research concerning the physiology of the ear and its correlations to the other senses—vision, taste, and smell. A few days before him there died Prof. Viktor Lang, the President of the Vienna Academy of Sciences, a famous physicist, the teacher of numerous generations of students in medical and general physics. He was an authority on crystallography and the physics of minerals; early in his career he gave up medical practice and devoted himself to science, but retained a great interest in all sides of medicine.

A New Medical Act.

As a result of the medical strike effected some few weeks ago the Government has now fulfilled its promise and brought before the National Assembly a Medical Act of which the following are the leading points. In future no person may practise medicine in Austria unless he or she can produce a diploma of Doctor of Medicine, granted or confirmed by an Austrian medical faculty. The preparatory hospital year, as demanded by all medical corporations, has

[1] See annotation, THE LANCET, July 16th, p. 144.

not been included in this Act, but will appear in the proposed reform of the medical curriculum. The title of "Arzt" (equivalent to doctor) will be protected by law and will be applicable only to persons qualified as above. The practitioner will not be permitted to have more than one office, nor may he practise or dispense medicine concurrently in several places. The doctor will not be allowed to follow an accessory occupation inconsistent with the dignity of the profession. His duties towards patients are defined in a series of regulations, amongst which the following are important. The doctor must use all his knowledge and conscience, according to the latest acknowledged achievements of his profession, in the treatment of those entrusted to his care. In urgent cases he is bound to give aid, and a refusal to act may bring him into conflict with the law, unless there are obvious reasons—e.g., personal disability—for his refusal. The doctor may claim compensation for first aid from the local authorities, but is entitled to refuse to treat the patient regularly unless the latter is in danger, and unless the disease is urgent. Professional secrecy is not as absolute as might be deemed wise in the new Act, for it is stated that every doctor is bound to treat as secret all disclosures by his patients made known to him during the course of or pertaining to the illness "unless higher interests intervene." This ruling will, no doubt, encounter severe opposition, as we have hitherto been used to maintenance of absolute secrecy. In future, moreover, the doctor giving an incorrect testimonial "to oblige a patient," as is sometimes done, will be punishable by severe fines. The Medical Council, or representative body of the medical profession, which has hitherto had little or no means of imposing a sentence passed on an accused member of the profession, will in future be entitled to impose a fine up to 10,000 kronen, or, if deemed necessary, to strike the name of the culprit off the medical register permanently or for a certain period. The Medical Council will, however, be required to apply the methods of regular law courts in dealing with an offence demanding such a strict punishment. The further details of the new Act are not very different from those now in force, but the profession will strive for the embodiment of all its demands for a modern perception of its rights and duties.

Protection of the Title of Specialist.

Some time ago the Vienna medical organisation undertook the disagreeable task of defining for limited use the term "specialist." A committee consisting of representatives of all medical corporations, universities, and hospitals evolved a scheme, the propositions of which Prof. Strausky has set out as follows. Only fully qualified doctors of medicine, having special training beyond the general instruction of medical men, should be entitled to call themselves specialists. At present only the following specialties are recognised: internal medicine, surgery and orthopædics, pædiatrics, neurology and mental diseases, ophthalmology, rhino-laryngology, otology, dermatology, venereal diseases, gynæcology and obstetrics, electropathology and radiology, and dentistry. Doctors should not be permitted to specialise in more than one branch of the above specialties, except in those which are naturally allied—e.g., otorhinolaryngology, mental and nervous diseases, &c. The title of specialist should be protected by law, equally with the degree of M.D., and should be granted by a special body or commission, consisting of members appointed by Government, the medical organisation, and the Medical Council. The applicant for the title would have to prove before this body that he has worked for a period of not less than two years in operative specialties, not less than three years in a special ward or clinic as assistant to the chief, or for four years if only as a member of the staff of such a ward or clinic. An examination of the candidate in the theory and practice of his selected specialty will be held. All professors of universities and others already recognised as specialists by the fact of their present occupation of posts as heads of special departments or as teachers (privat-docents) are exempt from such examination, and doctors who have already practised as specialists for at least two years would also be exempt. Furthermore, doctors who had graduated at least four years before taking up a special branch would be eligible for the title of specialist on binding themselves not to take up general practice. These regulations, it is thought, will meet the just demands of both general practitioners and specialists, and should regulate in an amicable way the relations between these distinct parts of the profession. The propositions contained in Prof. Strausky's report are being submitted to the profession for judgment, and if approved will soon be brought into force.

Bathing Fatalities.

The great heat has tempted large numbers of people to bathe in lakes and ponds, as well as in the open river; the negligence of bathers, together with the complete absence of first-aid arrangements, has resulted in many cases of drowning. The Medical Society of Vienna has therefore published in the daily papers a short instructive article warning those with affected hearts, and especially those with diseased ears, against the danger of cold water. The latter category of persons are especially unaware of the risk they run; a perforation in the drum may easily cause labyrinthine irritation and vertigo. The principles of artificial breathing and the methods of resuscitating the apparently drowned are also described, and public authorities are urged to establish a regular life-boat service, or at least to keep ready for use a small boat on all water used for bathing purposes. The teaching of swimming for school children is earnestly recommended as one of the chief means for doing away with these fatal accidents. In addition to the instructions and warning pertaining to the bathing itself, the public are also warned against the disagreeable—not to say dangerous—effects of over-indulgence in ice-cold drinks and fruit as well as of alcoholic beverages before bathing. Whether because of these warnings or not the number of drowning fatalities has recently been considerably diminished.

July 20th.

Public Health Services.

The London County Council and Public Health during the Heat Wave.

REPLYING to Mr. J. D. Gilbert, M.P., who asked for information as to public health in London during the recent dry weather, especially as to possible increase in scarlet fever or other epidemics, Captain Warburg (Chairman of the Public Health Committee of the L.C.C.) said the weekly average number of cases of scarlet fever had dropped from 925 in October, 1920, to 435 in April last. Since April the number of notified cases had been gradually rising, the present weekly average being 611. Diphtheria had decreased since the autumn of last year. With regard to other epidemic diseases, the position had on the whole been very satisfactory. The hot, dry weather did not appear to have affected, to any noticeable extent, the general health of the people, except that there were more persons, especially children, affected by slight febrile attacks, accompanied in some cases by catarrh of the respiratory passages. There had also been a slight increase in the number of deaths among children under two years from epidemic diarrhœa. It had not been found necessary to take any special action in the direction of safeguarding the health of the community apart from the measures of prevention which are ordinarily adopted.

Welfare of the Blind.

The General Purposes Committee of the L.C.C. has investigated the question of the establishment of a scheme for the welfare of the blind in the County of

London. On the recommendation of the Committee the Council has resolved that it will not at present provide or maintain institutions for adult blind persons, but will utilise to the greatest extent possible existing charitable and other associations. It was further agreed that a central council shall be established by the L.C.C. for advisory and other purposes, consisting of representatives of associations for the blind, representatives of the Council, and, if deemed desirable, other persons with special knowledge of the needs of the blind. A detailed welfare scheme which has been evolved by the General Purposes Committee is being forwarded to the Minister of Health for his approval.

Treatment of Tuberculosis.

In connexion with the scheme of the L.C.C. for comprehensive treatment of tuberculosis in London, the following recommendations by the Public Health Committee were adopted :—

(*a*) That the Ministry of Pensions be urged to expedite its decisions as to its acceptance of responsibility for the treatment of tuberculous ex-Service cases, not only in new cases, but also in cases at present receiving residential treatment, in which the Ministry of Pensions has not yet decided that the tuberculous condition of the patients is attributable to or aggravated by war service.

(*b*) That the Public Health Committee be authorised to arrange for the completion of courses of treatment and training in cases of ex-Service patients at present receiving treatment and training and in respect of whom the Ministry of Pensions decides that the tuberculous condition of the patients is not attributable to or aggravated by war service.

(*c*) That the Council is not prepared to include, amongst the objects of expenditure on the tuberculosis dispensary service ranking for the Council's grant under its scheme for the treatment of tuberculosis in London, expenditure by metropolitan borough councils on the provision of extra nourishment.

(*d*) That in cases in which the income of an insured person, accepted for residential treatment for tuberculosis, is the main support of the family, no assessment be made for contribution towards the cost of such treatment.

The Public Health Committee has accepted an offer by the authorities of Brompton Hospital to allocate for the sole use of the Council 260 beds at Brompton Hospital and 100 beds at Frimley Sanatorium for lump sum payments of £4000 a month. A similar arrangement has been entered into with the Victoria Park Hospital authorities, the monthly payments in this case being £888 17*s.* 9*d.* for 80 beds. The county medical officer has been authorised to arrange for 40 observation beds to be allocated to the Council at the Royal Chest Hospital, City-road. The observation beds at Brompton Hospital will be reduced by the same number.

Doctors' Certificates.

It was reported to the Middlesex Insurance Committee recently that the Tottenham Medical Union had asked the ruling of the Ministry of Health in the following circumstances : " A " is an insured person on the panel of " X." He goes to " Y," who is a panel doctor in the same locality known as " X," and pays him for treatment privately. In the event of " A " requiring a certificate of incapacity in order to obtain his sickness benefit, should " Y " give an ordinary National Health certificate or write a private certificate ?

The Minister replied that an insurance practitioner is only entitled to use the official form of certificate (Form Med. 40) for patients whom he is attending as insured persons. An insurance practitioner who is treating an insured person as a private patient would therefore have no alternative but to issue a private form of certificate.

Insured persons are not disqualified from receiving sickness benefit by obtaining medical certificates from doctors attending them in a private capacity, and a society is not entitled to refuse to receive and consider, in connexion with a claim to benefit, certificates not given under the medical certification rules. On the contrary, a society is bound to take into due consideration any medical certificate put forward in support of a claim. It is perhaps unnecessary to add, on the general question of the acceptance of fees by an insurance practitioner, that although, technically, an insurance practitioner is entitled to charge a fee to the patient of another practitioner who, in an exceptional case, applies to him for treatment as a private patient, it is clear that any practice of this sort would tend to be seriously prejudicial to the medical service for the insured.

The Services.

RE-ASSESSMENT OF PRE-WAR DISABILITY PENSIONS.

A QUESTION was recently addressed to the Minister of Pensions, in respect of the re-assessment of pre-war disability pensions of officers who served again in the late war, as it appeared such officers were debarred from any increase of either the service or disability elements of their retired pay, unless the total of such retired pay was less than the service element alone would now be under the new regulations, they were deprived of all compensation for the injuries received in their former service. The Minister was asked whether he would take steps to remove this injustice at once, and whether, as the pre-war Warrant, 1913, Article 564, laid down that these pensions were never to be less than the half pay of the rank, he would apply the new scale of half pay to such cases, pending the settlement of the new standard of disability retired pay, which it had been stated was still under consideration. Major Tryon (Parliamentary Secretary to the Ministry of Pensions) stated in his reply that it was necessary in this matter to distinguish (1) officers disabled before the present war and again disabled by services in it ; (2) officers disabled in former wars and not further disabled ; and (3) officers disabled by peace service before the present war, and not further disabled. The position of officers was fully considered by the Select Committee on Pensions and was provided for in the Royal Warrants of August 1st, 1917, and July 2nd, 1920 ; such officers generally gained considerable advantage so long as their disablement by Great War service continued. Officers in the second class could be dealt with under the warrant of Dec. 19th, 1919, the general effect of which was to give the disablement addition allowed by the warrant of 1917 to officers disabled in former wars and still suffering from the effects of such disablement. Article 564 of the pay warrant 1913 or 1914 only entitled the officers to whom it applied to the half-pay rates laid down in the warrant, and not to any higher rates introduced subsequent to the officer's retirement.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut. M. B. Macleod to be Surg. Lieut.-Comdr.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lieut.-Comdr. H. L. Murray and J. H. G. Howe to be Surg. Comdrs.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. P. MacKessack retires on ret. pay and is granted the rank of Col.

Temp. Capt. G. Marshall relinquishes his commn. and is granted the rank of Maj.

The undermentioned temp. Capts. relinquish their commns. and retain the rank of Capt. : P. P. Butler, J. Ash, J. E. Thompson, H. F. Stephens, J. Martin, and M. Ashley.

ARMIES OF OCCUPATION.

Capts. J. M. Chrystie and J. G. Morrin relinquish their commns.

1st (Lowland) Fd. Amb. (D.F.).—Temp. Lt. N. M. D. Fox relinquishes his commn. and retains the rank of Lt.

3rd (Welch) Fd. Amb. (D.F.).—Temp. Maj. A. Bird relinquishes his commn.

ROYAL AIR FORCE.

Flt. Lt. T. N. Wilthew relinquishes his temporary commn. on ceasing to be employed, and is permitted to retain the rank of Capt.

Lt. R. E. Burns is transferred to the unemployed list.

DEATHS IN THE SERVICES.

Col. C. H. Hale, C.M.G., D.S.O., late A.M.S., who died on June 20th at Portsmouth, aged 59, entered the service in 1887. He served in the Matabele war of 1896 and for his services received the D.S.O. He was an assistant director of medical services during the late war and was awarded the C.M.G. He retired in 1917.

Correspondence.

"Audi alteram partem."

AN APPEAL FROM THE RUSSIAN RED CROSS.

To the Editor of THE LANCET.

SIR,—I appeal to all my colleagues in the British Isles and the British Empire, imploring them to hear the cries and groans of the millions of my countrymen who are dying from starvation, cholera, typhus, dysentery, and malaria. The women and children are waiting for your help; not merely your sympathy, but your real and material help. We, who are physicians, know that to infectious disease there are no boundaries, no nationality, no rich, no poor, no strong, no weak. Infectious disease, in its march, destroys all that it meets.

I ask all British physicians to raise aloft the banner of humanity for speedy help to my country, by sending Medical Sanitary Detachments, Medicaments, and Hospitals to the areas of distress and famine. I shall be happy to furnish all particulars on application.

I am, Sir, yours faithfully,

B. BELILOVSKY, M.D. Petrograd,
L.R.C.P. & S. Edin. and Glasg.

8, Eccleston-street, London, S.W. 1.
(Telephone: Victoria, 2541.)

ROSACEA.

To the Editor of THE LANCET.

SIR,—Dr. A. Whitfield's Lumleian lectures, which you have recently published, are models of their kind, and in my opinion are among the most important contributions to the scientific study of dermatology that have appeared in this or any other country for many years. I have read them not once, but several times, and each time with more and more enjoyment. But I should like, if I may, to join issue with him on one point, namely—the ætiology of rosacea, and his classification of patients with this condition into two types: "the irritative and the toxic." I think he has to some extent misinterpreted some of my remarks in the paper on gastric analysis in cases of rosacea, which I published some time ago with Dr. J. A. Ryle, and I therefore wish to recapitulate the views which I then attempted to put forward.

Everything points to the idea that in rosacea the flushing of the face depends on some abnormality of the gastric mucous membrane. Probably in the majority of cases, if not in all, there is actual chronic gastritis—i.e., inflammation of the mucous membrane—and, although irritants such as alcohol, tea, coffee, condiments, &c., may be direct or predisposing causes, in many cases the constant swallowing of pus from the mouth or nasopharynx would seem to be the most important factor in producing the gastritis. The presence or absence of inflammation, however, in the gastric mucosa is difficult to determine, owing to the rapid post-mortem changes that normally take place in it. In early cases of rosacea the secretion of hydrochloric acid by the stomach may be normal or even temporarily excessive; in chronic cases there is almost constantly either marked hypochlorhydria, or frequently complete absence of free acid.

With regard to Dr. Whitfield's two types—the irritative or angeioneurotic and the toxic—although the distinction is a useful one clinically, I think that the flushing is in both cases dependent on the condition of the gastric mucous membrane. It can easily be understood that in persons with an unstable vasomotor system—and such are usually, though by no means always, women—the irritability of the gastric mucous membrane resulting from gastritis is apt to make the flushing of the face a more marked and frequent symptom than it is in their more phlegmatic fellow-sufferers. In the toxic type, although oral and nasopharyngeal sepsis and the secondary intestinal infection resulting therefrom may lead to severe toxæmia with "a pale, lemon-tinted complexion," and may predispose to staphylococcal infection of the skin, the rosaceous flushing is probably still dependent on the gastritis set up by the swallowing of pus. In my experience the toxic acne of middle-age, to which Dr. Whitfield refers, is usually accompanied by some degree of rosacea, and probably depends on the lowered resistance to infection that chronic sepsis creates.

Dr. Whitfield says that he cannot agree with my description of the appearance of the tongue in rosaceous patients. I admit that it is not a constant feature, but the majority of cases of both types certainly do have the pale, smooth (i.e., the papillæ are hardly apparent), flabby tongue that I described; it is often clean, though, of course, in the toxic type it is dirty and furred.

In conclusion, I will describe one case which illustrates some of the points I have raised:—

The patient is an unmarried lady, who came to see me first in April of this year for flushing of the face and pustules on the chin, to which she had been subject for the past five or six years. She had long suffered periodically from sore throats and laryngitis, and she complained of chronic post-nasal catarrh. Four years previously she developed "goitre," after an attack of tonsillitis, and, although this disappeared after a time, the thyroid continued to enlarge from time to time. She belongs certainly to the angeioneurotic type, and flushes very easily. When I first saw her she had mild persistent rosacea with pustules on the chin, but she was not anæmic and her complexion, apart from the pustules, was good. Her tongue was smooth, very pale, and slightly indented at the edges; her teeth were in good condition, but her tonsils were very septic, and contained definite pus in their crypts; muco-pus could also be seen in the nasopharynx. Although I could not arrange for a test-meal, I ordered her dilute hydrochloric acid in 40 minim doses after meals, and a resorcin-calamine lotion. She returned to see me a few days ago, saying that as long as she took the acid she remained entirely free from pustules, but whenever she omitted to do so for a few days a fresh crop would invariably appear. She no longer flushes after meals, but does so when excited or nervous; the flushing, however, on these occasions is not confined to the rosaceous areas.

Here, I think, we are dealing with an example of the angeioneurotic type, in whom gastritis had been produced by the constant swallowing of pus from septic tonsils and the nasopharynx. Although the enlargement of the thyroid, and, perhaps, indirectly the vasomotor instability, were probably due to the throat infection, the patient can in no sense be considered to belong to Dr. Whitfield's toxic group.

I am, Sir, yours faithfully,

H. W. BARBER.

Devonshire-place, W., July 30th, 1921.

THE SUPPOSED EXTERNAL EFFECTS OF HUMAN VISION.

To the Editor of THE LANCET.

SIR,—With reference to the paper by Dr. C. Russ in THE LANCET of July 30th, I would like to point out that, as such discoveries as these are as good as drink to the mystic and charlatan, it would be as well if they could be thoroughly investigated without loss of time. Indeed, their importance as error might well exceed their interest should they turn out well-founded, great as that must be for psychology as for physics. While acknowledging the restraint of Dr. Russ in his conclusions and disclaiming any right to criticise his method or observations, there appear to be certain considerations and questions with which he has not dealt. "The fact that the direct gaze or vision of one person soon becomes intolerable to another," which was the starting point of his research, is (in my opinion, adequately) accounted for already. The discomfort is not sensory but arises in the sphere of ideas and sentiments, and is manifestly dependent upon the past history of the patient and his psychic relations with the gazer. Thus a woman may feel

acute discomfort in the knowledge that someone is gazing at a hole in her stocking, a discomfort strictly analogous to that experienced by a person with something to conceal while another stares through "the windows of his soul."

We must admit that here, as in Dr. Russ's first experiment (where the solenoid swings according as the gaze is directed to one or other pole), the effect of the gaze takes place selectively in the *line of vision*, the least deviation of the physiological axis transferring the effect to the new point of fixation. Dr. Russ has omitted to draw the legitimate inference, that the effect is produced at the conjugate focus of the fovea centralis, or on that axis, since if all portions of the retina were equivalent the exact direction of the eye could have no significance, both poles of the solenoid having similar optical and other relations to the retina as to the eye as a whole. This experiment, therefore, indicates that the force (if there be such) emanates from the fovea and from no other part of the eye (at least in appreciable amount), and also, I think, that it is refracted by the optical media in a manner similar to light, although the macula is the most active part of the retina. These considerations and the problems they suggest cast some doubt on Dr. Russ's hypothesis, and the fact that they are not raised by him suggests that experiment has outrun reflection, as may happen with ultra-objective minds. Of course, the theory would look well enough if all retinal emanations could by refraction or otherwise be projected along the axis of macular vision; but though such a supposition is apparently a natural error, the Congress of Ophthalmologists must have known that whatever proportion of such emanations could escape from the eye, and whatever the refractive index of the media to them, they must then be dispersed in proportion as the eye tends to a distant focus.[1] Dr. Russ records incidentally and without comment that the influence was not reflected by a mirror, but does not give us any results to indicate the behaviour of the new force as regards distance of action, so that even this observation is unreliable. The only experiments on its conduction are on transmitting media. He does not study the effect of retinal inactivity through disease, or of opacity of the media, yet these are obvious controls, while the *deviation* of the force would supply a valuable clue to its nature.

It is to be hoped that Dr. Russ will inform us upon these and other points, as, I say, a partly known force supplies a convenient hypothesis which enables lazy thinkers to "pigeon-hole" inconvenient problems, and affords pabulum to the rabble of transcendent theorisers and myth-makers who stand between the people and truth.—I am, Sir, yours faithfully,

IAN D. SUTTIE, M.B., F.R.F.P. & S.Glasg.

Glasgow, August 1st, 1921.

[1] Supposing the active retina to be radiant, it is easy to calculate that only about a millionth of this total radiation will be projected upon the pole of the solenoid.

MEDICAL EXHIBITION AT DORPAT, ESTHONIA.—A Medical Exhibition in connexion with the First Esthonian Medical Congress is to be held from Nov. 30th to Dec. 7th next, in the rooms of the Hygienic Institute of the Dorpat University, and has for its object the acquainting of the population of Esthonia with the achievements, resources, and research of medical science as a whole. The Exhibition will comprise the following sections: (1) anatomy, physiology, pathology, forensic medicine, &c.; (2) hygiene, epidemiology, bacteriology, climatology; (3) clinical medicine, therapeutics, surgery, obstetrics, health resorts and sanatoria; (4) venereal diseases; (5) medicamental matters; (6) apparatus and instruments; (7) medical literature. Foreign associations, firms, and individuals are invited to take part, and applications from abroad will be accepted up to August 15th. The Esthonian Government will grant the following facilities to those desirous of participating in this Exhibition. Exhibits from abroad will be free of Custom duty if not sold in Esthonia; no space fee will be charged; free visas will be granted on application to intending visitors to the Exhitition. Further particulars may be obtained on application at the Esthonian Legation, 167, Queen's-gate, London, S.W. 7.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Legislative Programme.

On Tuesday, July 26th, Mr. A. CHAMBERLAIN (Lord Privy Seal), in making a statement to the House of Commons on the Government's programme of business for the remainder of the Session, indicated that the War Pensions Bill was among the measures which it was necessary to pass into law before Parliament adjourned. On the other hand, the Summer Time Bill and the Clinical Thermometers Bill would not be proceeded with further. Among other Bills that the Government would not press—certainly not after 11 o'clock, unless they could be passed with general consent—were the Criminal Law Amendment Bill and the Licensing (No. 2) Bill.

Medical Privilege.

Lord DAWSON OF PENN had given notice of his intention to call attention in the House of Lords on Wednesday, July 27th, to recent rulings as to the privilege of medical men with regard to evidence in Courts of Justice and to move that the matter be referred to a Select Committee of the two Houses of Parliament. He explained, however, that he had received an intimation from the Government that it would be more convenient that the motion should be postponed. He hoped that the postponement, to which he assented, would be for a short time only.

Criminal Law Amendment Bill.

The Criminal Law Amendment Bill was considered on Tuesday, July 26th, by a Standing Committee of the House of Commons, Mr. RENDALL in the chair. On Clause 1, which provides that it shall be no defence to a charge or indictment for an indecent assault on a child or young person under the age of 16 to prove that he or she consented to the act of indecency, Major CHRISTOPHER LOWTHER moved that the age should be reduced to 15.—Major FARQUHARSON, who was in charge of the Bill, said he could not accept the amendment, which was negatived.

Mr. RAWLINSON moved a proviso that "the party so consenting shall be guilty of a misdemeanour." He objected to such grievous power being put into the hands of young girls by the clause as it stood.—Mr. SHORTT (Home Secretary) hoped the Committee would not accept the amendment, which might have the effect of defeating the real objects of the Bill.—On the suggestion of Earl WINTERTON the amendment was amended so as to limit its operation to young persons of 15 years. This was agreed to by 17 votes to 12.

An amendment, moved by Mr. RAWLINSON, to Clause 2, omitting a subsection providing that reasonable cause to believe a girl was of or above the age of 16 shall not be a defence to a charge of seduction was rejected by 21 votes to 4.—Major CHRISTOPHER LOWTHER moved that the subsection should apply only where it was proved that up to the time the offence was committed the girl was virgo intacta.—Sir RYLAND ADKINS said it would be quite impracticable to apply such a test, and the amendment was withdrawn.

Sir RYLAND ADKINS moved the omission of the subsection extending the time for taking proceedings under the clause from 6 to 12 months after the commission of the offence.—The amendment was agreed to.

Sir R. THOMAS moved an amendment on Clause 3, which increases the penalties to which persons summarily convicted of brothel keeping, &c., are liable, providing that any such person who was an alien should, in addition to any such punishment under the clause, be recommended for deportation.—The amendment was agreed to, as was also a new clause, moved by the same hon. Member, providing that any alien convicted of procuring or attempting to procure should be recommended for deportation, in addition to receiving the punishment already provided by law.

The Committee stage of the Bill was concluded, and the Bill was ordered to be reported to the House.

HOUSE OF LORDS.

TUESDAY, JULY 26TH.

Coroners (Remuneration) Bill.

The Coroners (Remuneration) Bill was read a third time and passed. [On Thursday, July 28th, the Royal Assent was given to this Bill, as well as to the Dentists Bill, the Public Health Officers Bill, the National Health Officers Bill, and the Health Resorts and Watering Places Bill.]

HOUSE OF COMMONS.

WEDNESDAY, JULY 27TH.

Appointments of Medical Referees.

Mr. MYERS asked the Minister of Pensions whether, seeing that the original appointments of medical referees were

made before the completion of medical demobilisation, these appointments would now again be declared vacant and re-advertised, or whether the original appointments were to be considered the permanent appointments of the present holders.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: I would refer my hon. friend to the answer given to the hon. Member for Hemsworth on June 16th, of which I am sending him a copy.

Home Hospitals for Defective Children.

Lieut.-Colonel FREMANTLE asked the President of the Board of Education if, under the grant regulations of the Education Act of 1918, a grant of some £16 to £25 was made in respect of each child of the age of 2 years and upwards residing in a home hospital for physically defective children; that a certificated teacher must be employed in the training of such children, and if he was aware that in some cases certificated teachers, from £200 a year, were employed in such homes for teaching about a dozen children for a few hours a day for five days a week, despite the fact that before the Act came into force adequate teaching was given to such young children free of charge by voluntary helpers; and would he consider whether a more economical method could be employed.—Mr. FISHER replied: The grants payable to certified voluntary boarding special schools which provide maintenance and treatment as well as instruction are, under Grant Regulation No. 19, approximately as stated. The qualifications required in the teaching staff of these schools are set out in Appendix B of the Regulations, and have not been raised since the passing of the Act of 1918. Proposals for economy in the staffing of individual schools are, and will be, considered by the Board on their merits.

Ex-Service Men in Mental Hospitals.

Colonel WEDGWOOD asked the Minister of Pensions whether he had any authority to intervene in any way in the cases of ex-Service men, under the Lunacy Acts, who had the status of private patients.—Mr. MACPHERSON replied: I have no authority to intervene in matters coming within the scope of the Lunacy Acts; but in all other questions affecting Service patients I have the same powers as in the case of other pensioners. I may, however, say that by the courtesy of the Board of Control a medical officer attached to Ministry headquarters now visits, in conjunction with the Commissioners of the Board of Control, mental institutions in which ex-Service men are under treatment as private patients.

Committee on Leadless Paints.

Captain BOWYER asked the Secretary for the Home Department what was the composition and terms of reference of the fresh committee which he had promised to appoint to examine the recent further evidence as to the results obtained with leadless paints—Mr. SHORTT: I am not yet in a position to announce the composition and terms of reference of this Committee, but I hope to do so shortly.

Mentally Deficient Children.

Major BIRCHALL asked the Minister of Health whether he would state the number of Poor-law children in separate Poor-law institutions for the sick, in separate Poor-law institutions for the mentally deficient, and in non-Poor-law institutions on Jan. 1st, 1921.—Sir A. MOND replied: The numbers on Jan. 1st, 1921, were as follows:—

—	Not mentally infirm.	Mentally infirm.	Total.
In separate Poor-law institutions for the sick ..	7086	99	7185
In separate Poor-law institutions for the mentally infirm	—	1329	1329
In non-Poor-law institutions (not being lunatic asylums)	8550	*689	9239

* Including 639 in separate institutions for the mentally infirm.

THURSDAY, JULY 28TH.

Housing Conditions in Scotland.

The House went into Committee on a Vote of £1,875,999 for the salaries and expenses of the Scottish Board of Health, Mr. J. HOPE in the chair.

Mr. ROBERTSON moved to reduce the Vote by £100 for the purpose of calling attention to housing and the insanitary condition, especially of the mining towns and villages, in Scotland. He said the Housing Commission's report in 1911 stated that there were in Scotland no less than 129,730 single-apartment houses, equal to 12·8 of the total number of houses. Of the total population of Scotland 400,000 people at that date were living in single-apartment houses, and 39·3 per cent., or nearly 2,000,000, were living in two-apartment houses. The conditions were worse now than they were in 1911, because, according to the census figures, the population had increased by 2½ per cent. In no fewer than 800 houses the inmates exceeded eight in number. There were thousands of instances at the present time of more than one family living in a two-apartment house, and many instances of more than one family living in a single-apartment house. There were instances of 11 or more persons living in a single room. In 1911 the death-rate in one-roomed houses was 20·14 per 1000, in two-roomed houses 16·83 per 1000, in three-roomed houses 12·63 per 1000, in four-roomed houses 10·32 per 1000, and so on. In the county of Lanark there were many cases where consumptive patients were obliged to live in the same room with several other persons. The cruelty of it was that when these people were taken from these dens, and hope had been revived in their breasts by residence in a sanatorium, they were driven back again to live out their existence in the dens owned by rich men where they contracted the disease. Do not let them cast their eyes to the ends of the world and beat their hands on their breasts and thank God that we were not like other nations. Why were our wealth producers rotting in the slums while the Government were spending money on military adventures in far-off lands that had little connexion with our country? He sincerely hoped that on this question of housing in Scotland there would be no holding back.

Mr. MUNRO (Secretary for Scotland) said that he agreed with Mr. Robertson that the conditions of housing in some of the mining districts were an outrage upon decency and a blot upon civilisation. As regarded tuberculosis and infantile mortality, however, it was curious to find, notwithstanding the shocking housing conditions to which Mr. Robertson referred, that both infantile mortality and tuberculosis had steadily declined in Scotland during the last 10 years. While in 1911 infantile mortality in Scotland was 112 per 1000, it had diminished in 1920 to 92 per 1000; and while the death-rate from phthisis in Scotland in 1910 was 115 per 100,000, the figure had fallen to 88 in the year 1919. He claimed that, so far from having neglected the housing of the working classes, the present Government had made a larger contribution to the solution of housing problems in Scotland and England than any other Government in the history of this or any other country in Europe, or perhaps in the world. All the Government were doing was to mark time and call a halt in approving tenders until sufficient progress had been made with the houses that were now under construction.

Mr. W. GRAHAM said he was not in any way an authority on medical matters, and he did not know how far it was possible to trace the prevalence of cancer to bad or indifferent housing conditions, but a very large proportion of the cases came from the same locality, and that seemed to point to the importance of some investigation from the standpoint of this disease, which in some way appeared to be taking the place of tuberculosis.

Captain ELLIOT: Surely it is agreed that cancer occurs in good houses as well as bad.

Mr. GRAHAM said he entirely agreed that they found cancer in every grade of society, but in Scotland a very large number of cases came from certain areas, and he suggested that while tuberculosis was decreasing other diseases were increasing, and that seemed to be a matter worthy of investigation.

After further discussion the vote was agreed to by 173 votes to 58.

War Neurosis and Shell-shock.

Mr. MILLS asked the Minister of Pensions what was approximately the total number of pensioners now receiving treatment for war neurosis and other shell-shock conditions; and what was the number and proportion of these cases who had yet had no treatment or were awaiting treatment.—Mr. MACPHERSON replied: There are now approximately 3400 men under treatment in institutions for disabilities of this nature. About 900 are awaiting admission, and, if unable to work, are receiving treatment allowances. I may add that there are a large number of cases in which out-patient treatment is found to be sufficient.

Medical Courses in Psychotherapy.

Mr. FREDERICK ROBERTS asked the Minister of Pensions whether a medical man trained as a psychotherapist by the Ministry of Pensions, and refused work as a neurological specialist, would be accepted for work on the neurological boards in London in place of one of the untrained ordinary members or neurological members of such board, or whether, in the interests of the pensioner, such training was to be allowed to go to waste.—Mr. MACPHERSON replied: The scheme of training medical men in psychotherapy was instituted by my Department to meet the urgent need for this particular form of treatment, and until the demand in the different areas has been fully met, the question of employing them on medical boards does not arise.

The Price of Spirits.

Mr. HIGHAM asked the Prime Minister whether he would consider the advisability of removing the restrictions

governing the price at which whisky could be sold to the public; whether he was aware that the present high price of whisky was due to the fact that the Government took 8s. 5½d. per bottle from the price paid by the consumer for whisky 30 per cent. under proof; and would he explain the reason for the continuance of this imposition.—Mr. BALDWIN (President of the Board of Trade): This matter is under consideration.

Infantile Mortality in British Guiana.

Mr. STEWART asked the Secretary of State for the Colonies the latest statistics as regards infantile mortality in the Colony of British Guiana, and the figures showing the population to-day in comparison with recent years; whether the lack of population could be in any way attributed to defective sanitary administration which, owing to the low-lying nature of the coast-line, was imperatively necessary; whether the present insanitary conditions were due to the lack of proper administration on the part of the executive or to a lack of proper sanitary laws on the part of the legislature.—Mr. CHURCHILL replied: In British Guiana the rate of mortality of infants under one year was 223 per 1000 in 1918 and 185 per 1000 in 1919. The returns for 1920 have not yet been received, but may be expected shortly. The figures for 1918 were adversely affected by shortage of food caused by the war. The population was 278,000 at the census of 1891, 296,000 at the census of 1911, and was estimated at 306,000 in 1919. Sanitary work in the coast-strip is heavily handicapped by natural conditions, as the cost of good drainage is often prohibitive. Improvement in sanitary conditions which will continue to engage my careful attention depends, in my judgment, principally upon the general development of the colony—with regard to which I am in consultation with the Governor. There is no restriction as regards the nationality of foreign immigrants other than ex-enemies.

MONDAY, AUGUST 1ST.

Officers' Pensions and Medical Fees.

Major GLYN asked the Financial Secretary to the War Office whether, when an officer commuted his pension, after having undergone a medical examination, he would consider a revision of the costs charged as a fee, which at present varied from £1 to £10, to a uniform figure of £2, in view of the fact that this sum was said to be charged to defray the cost of the medical examination, which necessarily was of the same character for all cases; and whether Clause 9 of the form of instructions to officers in the army on this subject, dated July, 1920, might be amended accordingly.—Mr. HILTON YOUNG replied: I think that the method of charging a fee bearing some relation to the amount of the sum for which the pension is commuted is, in all the circumstances, the most equitable method, and I am unable therefore to revise the regulations in the manner proposed.

Insanitary Milk Transit.

Mr. CHARLES EDWARDS asked the Minister of Health whether his attention had been called to the complaints of dairymen to the effect that milk churns were often transported in guards' vans and luggage vans which were not suited to the carriage of milk in hot weather, with the result that much milk was wasted because it turned sour in transit, and that the health of the infant population suffered from the shortage; and whether he could take any steps to induce railway companies to provide better facilities for the conveyance of milk.—Sir ERIC GEDDES replied: Neither my right honourable friend, the Minister of Health, nor I have received any complaints of the nature indicated, but I shall be pleased to inquire into any specific instances which may be brought to my notice.

Suicide and War Neurosis.

Mr. MYERS asked the Minister of Pensions what was the total number of suicides among the in-patients of pensions institutions for war neurosis; whether certain institutions had a higher record in this respect, and why; and whether there was sufficient staff, medical, nursing, and orderly, in such institutions to lessen the painful occurrences of suicides.—Mr. MACPHERSON replied: I understand that out of the very large number of patients who have received treatment for neurasthenia in Ministry institutions, there have been eight cases of suicide, and that in no institution has there been more than one such fatality. In no case was it found that there was negligence or inadequate supervision, and I am satisfied that every reasonable precaution is taken to guard against these distressing occurrences.

Naval and Military Medical Appointments.

Commander BELLAIRS asked the Financial Secretary to the Admiralty how many medical officers in the navy held appointments, whether administrative or clerical, where they are not practising their profession in the direct treatment of human ailments and injuries.—Mr. AMERY replied: Eight medical officers of the naval service hold appointments of a clerical or administrative nature where they are not called upon to undertake the direct treatment of human ailments or injuries, but I may point out that the duties of these officers include the examination of candidates for entry and the survey of invalids, &c., which is essentially work for a medical officer. There are also five naval health officers, whose work, while not involving direct treatment as defined by the hon. and gallant Member, should be classed under the heading of preventive medicine.

Commander BELLAIRS asked the Secretary of State for War how many medical officers in the army hold appointments, inclusive of India, where they are not practising their profession in the direct treatment of human ailments and injuries.—Sir L. WORTHINGTON-EVANS replied: The total number of medical officers in the army at home and abroad (excluding India) who are not practising their profession in the direct treatment of human ailments and injuries is 166—the whole of the remainder being employed in direct treatment of human injuries and ailments. The 166 officers include those employed as professors and instructors at the Royal Army Medical College and elsewhere; those employed in preventive medicine, hygiene, and other scientific subjects, and in the medical examination, inspection, and training of recruits, and also 26 officers doing duty in territorial schools of instruction and in administrative medical posts with territorial divisions. I regret that similar information for India is not readily available, and could not be obtained without reference to that country.

Medical Service of the Air Force.

Commander BELLAIRS asked the Secretary of State for Air whether his Council was attempting to build up a separate medical service from the Army and Navy; if so, how many medical officers were there; whether casualties or invalids were sent both to naval and military hospitals, or exclusively to military hospitals; and whether any hospitals had been or were being built for the Air Force.—Captain GUEST replied: The answer to the first part of the question is in the affirmative, and to the second part, 124. This figure excludes medical officers employed at the Air Ministry. With regard to the remaining parts, casualties and invalids are sent, where possible, to the nearest naval, military, or civil hospital. No hospitals have been or are being built for the Royal Air Force, but Royal Air Force hospitals have been established in buildings at Halton and Cranwell which were formerly occupied by other units. In addition, a temporary hospital for officers exists at Avenue House, Finchley. The latter is a private house, hired for the purpose, and has not been altered.

TUESDAY, AUGUST 2ND.

Women Panel Doctors.

Sir WALTER DE FRECE asked the Minister of Health if he would state how many women physicians were at present acting as panel doctors; and, in that case, how many patients they had on their lists.—Sir ALFRED MOND replied: 117 women physicians are at present acting as panel doctors in England and Wales and the number of patients on their lists is 40,686.

Working Expenses of Army Hospitals.

Captain WEDGWOOD BENN asked the Secretary of State for War what was the reason for the increase in the charges for educational establishments and working expenses of hospitals and depôts in the Estimates for the present year.—Sir L. WORTHINGTON-EVANS replied: I understand the question to refer to the total of Head III. of the Estimates entitled "Cost of Educational, &c., Establishments and Working Expenses of Hospitals, Depôts, &c.," which shows the full cost of the various Army institutions and establishments for which working expense accounts have recently been instituted under the new system of Army accounting. The increases as compared with 1920-21 are mainly due to two causes; firstly, as in the case of depôts, to the expansion of this sub-head to include classes of depôts not previously costed; and secondly, as to the case of the schools and technical establishments, to fuller information, disclosed by the new accounts as to the actual cost of these institutions, including such items as stores consumed and rental value of the properties. Notes will be found on the explanation pages of the estimates opposite each individual institution, and in any particular case I shall be happy to supplement the information there given as far as possible.

THREAT OF FAMINE AND PELLAGRA IN U.S.A.—A large portion of the Southern cotton belt is apparently in danger of serious food shortage and an epidemic of pellagra. The President is stated to have instructed public health and Red Cross authorities to ascertain what relief can be afforded by the Government. The difficulty of selling cotton has resulted in a shortage of money, and many thousands of people are apparently deprived of the foodstuffs which protect against this disease.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At meetings of Comitia of the Royal College of Physicians and of the Council of the Royal College of Surgeons, on July 28th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 107 candidates (82 men and 25 women) who have passed the Final Examination in Medicine, Surgery and Midwifery of the Conjoint Board, and have complied with the by-laws. The following are the names and medical schools of the successful candidates:—

G. K. Arthur, St. Bart.'s; A. W. Austen, Westminster; Martha F. Barritt, Manchester; Frances S. Barry and Geraldine M. Barry, Royal Free; Marjorie M. S. Bartlett, St. George's; Hylda C. Briscoe, St. Mary's; Lorna P. Brown, Royal Free and Univ. Coll.; G. G. Bruce, Aberdeen; E. M. Burrell, Cambridge and St. Thomas's; A. V. Campbell, Liverpool; F. C. W. Capps, St. Bart.'s; Christabel L. M. Charlesworth, Glasgow and King's Coll.; J. C. Churcher, St. Thomas's; L. E. Claremont, Univ. Coll.; Marion C. V. Clarke, Royal Free; C. S. Cloake and I. J. Corbett, London; R. D. Cowan, Toronto; J. N. Craig, Dundee; E. Cuerel, Lausanne; J. J. da Gama Machado, St. Bart.'s; H. C. de Penning, Bombay and St. Mary's; E. C. Dodds, Middlesex; J. R. Dow, Charing Cross; T. W. K. Dunscombe, Durham; E. R. D. Eastman-Nagle, St. Thomas's; Doris Kathleen Emery, Royal Free; F. T. Evans, St. Bart.'s; J. C. Evans and J. Franks, London; H. Freeman, Westminster, E. St. C. Gainer, Middlesex; P. P. Gandhy, Bombay and St. Mary's; B. Gould, London; Marjorie P. C. Greene, Royal Free; J. F. Hackwood, St. Thomas's; A. H. Hall, Birmingham and London; G. A. M. Hall, Durham; M. Hall, Guy's; B. J. Hallows, St. Bart.'s; G. H. C. Harding, Liverpool; S. Hartley, Oxford and St. Thomas's; S. E. Harvey, St. Thomas's; Marjorie Hawkins, Westminster; M. S. Hashish, Cairo and St. Bart.'s; A. D. Hepburn, Cardiff and Westminster; I. Hipshon, Leeds; R. J. Hodgkinson, Guy's; C. A. Horder, Cambridge and St. Bart.'s; Erna Henrietta Jebens, Royal Free and St. Mary's; L. M. Jennings, St. Bart.'s; Margaret G. Jones, Royal Free; R. C. Lightwood, King's Coll.; D. M. Lloyd-Jones, St. Bart.'s; Eva Lombard, Geneva; Muriel J. Lough, St. Mary's; A. G. Mackay, Edinburgh; D. McClean, St. Thomas's; C. G. Martin, Cambridge and St. Bart.'s; Enid M. Moore, St. Mary's; L. S. Morgan, St. Bart.'s; J. N. Morris, King's Coll.; R. E. Murray, Calcutta; M. Newman, Liverpool; T. S. North, St. Mary's; H. A. Osborn, Oxford and King's Coll.; Alice Owen, Royal Free; A. Pain, Middlesex; D. B. Pauw, Oxford and St. Bart.'s; Winifred Peacey, Royal Free; L. S. Perera, Singapore and London; Mary W. Pitt-Lewis, Royal Free and St. Mary's; E. Philbin, Manchester; J. H. Porter, Cambridge and Univ. Coll.; J. G. Reed, St. Thomas's; L. M. Rice, Toronto; G. H. Roberts, Charing Cross; A. Robertson, Guy's; Mary F. Roope, Charing Cross; E. Savage, Cardiff and St. Bart.'s; T. Seshachalam, Madras and London; H. Shannon, St. Bart.'s; W. Shaw, Cambridge and St. Bart.'s; A. H. Shelswell, Guy's; S. S. Shri-Keni, Punjab and Liverpool; O. L. C. Sibley and A. I. Silverman, Middlesex; S. R. Simaika, St. Bart.'s; L. Smalley, St. Thomas's; H. K. Snell, King's Coll.; Dorothy M. Stewart, Royal Free and St. Mary's; Y. A. Sumbul, St. Mary's; Muriel A. Sutton, Univ. Coll.; Marjorie P. Taylor, Charing Cross; Wenefride Thompson, Royal Free and St. Mary's; A. W. Tibbetts, Birmingham; Doris Lyne Veale, Royal Free; A Verwey, Leyden and St. Bart.'s; J. G. Walker, Charing Cross; W. J. G. Walker, Univ. Coll.; L. K. Watson and L. R. A. Wells, Guy's; E. T. Wright, St. Mary's; J. E. Wright, Guy's; and C. F. Young, London.

Diplomas in Tropical Medicine and Hygiene were conferred upon the following 25 candidates from the London School of Tropical Medicine:—

W. Allan, Aberdeen Univ.; J. A. Anklesaria, Bombay Univ.; P. M. Antia, Bombay; S. Bardhan, Calcutta Univ.; W. B. Borden, Maryland, U.S.A.; E. J. Clark, Edinburgh Univ.; K. Comyn, Cambridge Univ and Roy. Army Med. Coll.; S. D. De Vos, Ceylon Med. Coll.; S. F. Dudley, St. Thomas's Hosp.; K. A. Gandhi, Bombay Univ.; L. E. Liat, Singapore Med. Coll.; J. P. Litt, Edinburgh Univ.; T. C. St. C. Morton, Edinburgh Univ.; J. S. Nicholson, Glasgow Univ.; K. S. Nigam, Allahabad Univ.; W. S. Ratnavale, Calcutta Univ.; S. Roach, St. Bart.'s Hosp.; Alice I. Shaw, Calcutta Univ.; H. C. Sinderson and E. T. A. Stedeford, Edinburgh Univ.; W. M. Tough, Aberdeen Univ.; H. M. S. Turner, Guy's; A. M. Walcott, California, U.S.A.; T. B. Welch and N. M. Wilson, St. Bart.'s Hosp.

Diplomas in Ophthalmic Medicine and Surgery were conferred upon the following candidates:—

G. M. Ali, Allahabad Univ.; M. D. Anklesaria and C. R. Athavale, Bombay Univ.; E. R. Chambers, London Hosp.; F. B. Chavasse, Oxford and Liverpool Univs.; R. M. Dickson, St. Andrew's Univ.; G. C. Dixon, Oxford and Manchester Univs.; J. M. Gibson, National Univ. Ireland; E. W. Ingle, Edinburgh Univ.; R. D. Kamdin, Bombay Univ.; L. A. R. V. Koil Thampuran, Madras Univ.; Ida C. Mann, St. Mary's Hosp.; R. R. Mishra and S. S. Mohamedi, Bombay Univ; R. B. North, Sydney Univ.; F. H. Robinson, Cambridge Univ. and London Hosp.; C. Rudd, Birmingham Univ.; N. L. Sheorey and C. N. Shroff, Bombay Univ.; H. J. Taggart, Queen's Univ.; J. N. Tennent, Glasgow Univ.; and T. H. Whittington, King's Coll. Hosp.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia of the College was held on July 28th, Sir Norman Moore, the President, occupying the chair. Dr. J. Beresford Leathes was admitted to the Fellowship of the College.

The following candidates having passed the required examination were admitted Members: Drs. S. C. Basu, J. V. C. Braithwaite, J. C. Bramwell, W. Brown, A. E. Clark-Kennedy, R. L. T. Grant, D. McE. Kilgour, N. Kletz, H. M. Oddy, H. S. Pemberton, A. Piney, R. J. Reece, L. R. Shore, J. H. Spencer, A. F. Tredgold.

The resignation of his membership by Dr. F. Edge was accepted and an application by Dr. J. J. MacW. Dunbar, asking that the Membership, which he resigned in 1881, might now be restored to him, was granted.—The Dean of the Faculty of Medicine, Edinburgh University, announced that the Murchison Memorial Scholarship for the current year had been awarded to Dr. Jessie McCririe Craig.—The President announced that he had appointed Sir John Rose Bradford to represent the College on the Voluntary Hospitals Commission. On the recommendation of the Council the Baly medal was awarded to Dr. Henry Hallett Dale and the Moxon medal was awarded to Sir Thomas Clifford Allbutt.—The Weber-Parkes prize and medal was awarded to Dr. Louis Cobbett, for his researches on tuberculosis as embodied in his book entitled "The Causes of Tuberculosis."—Dr. Drewitt was appointed a representative of the College on the Committee of Management of the Chelsea Physic Garden, vice the late Sir George Savage.—Dr. Sidney Martin and Sir Arthur Newsholme were re-elected representatives of the College on the Executive Committee of the Imperial Cancer Research Fund.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary council meeting was held on July 28th, Sir Anthony Bowlby being in the chair. Prof. C. S. Sherrington, P.R.S., was admitted as a Fellow of the College under the rule relating to the election of members of 20 years' standing.

A letter was read from Mr. J. S. Rodman, secretary to the National Board of Medical Examiners of the United States of America, transmitting the following resolution passed at the annual meeting of the Board: "Resolved: That whenever a candidate appears before the National Board for examination presenting a certificate from the Conjoint Board in England, the same shall be accepted as a satisfactory qualification for admission to Part III. (practical) of the examination required by the National Board of Examiners."

UNIVERSITY OF ABERDEEN.—At the recent summer graduation the Struthers Medal and Prize in Anatomy was awarded to Dr. Annie Anderson for "Preparations Showing Development of Cerebral Fissures during Fœtal Life." The Lizars Medal in Anatomy was awarded to Edward C. Chitty and William Gunn (equal).

UNIVERSITY OF MANCHESTER.—The following appointments have been made: Assistant Director of the Physical Laboratories, Mr. J. M. Nuttall, M.Sc. Manch., Senior Lecturer in Physics; Lecturer in Chemistry, Mr. D. C. Henry, B.A. Camb.; Lecturer in Education, Mr. P. G. Reynolds, B.A. Lond. The Cheshire County Council Education Committee have renewed their annual grant of £500 to the University.—The following award has been made: Moseley Memorial Prize in Physics, A. J. Hailwood.—The following representatives of the University on Outside Institutions have been appointed: General Medical Council, Prof. H. R. Dean; Fleetwood Secondary School, Prof. Calder; Bolton School, Colonel E. W. Greg, C.B.; Leek High School, Mr. Herbert Morris; Leek Westwood Hall Girls' High School, Miss Mary A. B. Herford, M.A.; John Rylands Library, Prof Herford and Prof. Kastner; Winwick Educational Foundation, Mr. Geoffrey Owen.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following are the results of the examination held at the end of the sixty-sixth session (May to July, 1921):—

*S. Dudley (Surg. Comdr., R.N.) ("Duncan" and "Lalcaca" medals), *K. S. Nigam, *T. C. Morton (Flight-Lieut., R.A.F. Med. Ser.), *A. C. Vardon, *J. P. Litt (Capt., R.A.M.C.), *Lee Ee Liat, *J. Kilian Clarke, *K. A. Gandhi, *E. T. C. Stedeford, *H. M. Stanley Turner, (Wing-Comdr., R.A.F. Med. Ser.), H. C. Sinderson, W. B. Borden (Major, U.S. Army), S. Roach (Surg.-Comdr., R.N.), A. M. Walcott, J. Singh, R. Hunter, F. Dahlerup, W. Milne-Tough, L. B. Perry, R. M. Bharucha, E. J. Clark, R. L. Symes, J. A. Anklesaria, P. M. Antia (Capt., I.M.S.), L. W. Barlow, S. N. Bardhan, J. C. Callanan, H. G. Holdbrook, E. Matthai, W. J. McClintock, J. S. Nicolson, A. C. Paterson, P. Popoff, W. S. Ratnavale, J. A. Ross, A. D. Soares, R. H. Turner, S. de Vos, N. M. Wilson, J. A. A. Duncan, J. Grell, P. R. Lentin, Hassan A. Soud.

* With distinction.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—The following candidates have passed the Final Dental Examination, and have been granted the diploma L.D.S. R.C.S. Edin.:—

Sidney Sack, James D. C. Archibald, Michael J. Quinlivan, Gerrit Johannes Lamprecht, Esias Andries Nortje, Raymond Levey, James S. Wilson, William Gunn, and Leonard Lees. Douglas G. Munro passed in the subject of Medicine and Surgery.

UNIVERSITY OF GLASGOW.—The following degrees were conferred on July 18th:—

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Thomas F. Arnott, John Barlow, Alexander K. Bowman, Thomas M. Burton, Donald S. Campbell, Thomas C. Christie, Percy B. Farrar, Lennox M. Johnston, Alexander A. Kirkland, James R. Learmonth (with honours), William M. McCash, John M. McKenzie (with commendation), Alexander H. McLean, George L. Mitchell, G. W. St. Clair Ramsay (with commendation), Rebecca E. Roulston, William L. Templeton (with commendation), Ernest J. T. Thompson, James Watt, John C. Watt, Jeanie L. D. Wilson, and Robert McLaren Wilson.

NATIONAL VETERINARY MEDICAL ASSOCIATION.—Dr. O. Charnock Bradley, of Edinburgh, was re-elected President of the Association at the annual meeting at Chester, on July 27th.

WALSALL HEALTH COMMITTEE.—The Ministry of Health has withdrawn on grounds of economy its sanction to a scheme of the Committee to provide an open-air pavilion for consumptive children in the borough.

LITERARY INTELLIGENCE.—The Roll of War Service of the University of London Officers Training Corps just being published by the Military Education Committee of the University, at 46, Russell-square, London, W.C., contains the names and particulars of 665 fallen officers who were members or former members of the Contingent. A second section records 1726 honours and distinctions awarded to 1068 officers, including V.C., 5; D.S.O. with bar, 5; D.S.O., 45; M.C. with two bars, 3; M.C. with bar, 44; M.C., 497; D.F.C., with bar, 1; D.F.C., 9; A.F.C., 10; Mentioned in Despatches, 584 (twice, 97; thrice, 19; four times, 6; five times, 2; six times, 1); foreign awards, 114. The third section gives particulars of 4276 officers and former officers and cadets of the Contingent who served as officers in the war. The price is one guinea in cloth binding, packing and postage 1s. extra. Other bindings are available.—Mr. Henry Kimpton is publishing the following new books and new editions: Diseases of Children, designed for the use of students and practitioners of medicine, by Herman B. Sheffield; Physical Diagnosis, by W. D. Rose, 2nd edition, revised and enlarged; Tuberculosis, and How to Combat It, by F. M. Pottenger.

DONATIONS AND BEQUESTS.—Mr. John Graham Rodger, of Beacon Hill, Liverpool, former member of the Mersey Docks and Harbour Board, has left the following bequests. The bequests, besides others, include £5000 each to the Liverpool Royal Infirmary, Northern Hospital, Royal Southern Hospital, Bluecoat Hospital, Woolton Convalescent Institution; £2000 each to the Liverpool Merchants' Guild, Home for Female Incurables, and Myrtle-street Children's Infirmary; £1000 each to the Indigent Blind School, Mount Pleasant Consumption Hospital, Eye and Ear Infirmary (West Kirby), Children's Convalescent Home.—The late Mr. John Bevan Morgan, of Llanelly, Carmarthen, has left £750 to the Llanelly Hospital, and £25 each to the Carmarthen Infirmary, the Deaf and Dumb Institution, Swansea, and the Institution for the Blind, Swansea.—By will the late Mrs. Susan Mary Harries, of Wem, Salop, left £300 each to the Royal Salop Infirmary, the Wolverhampton Orphanage, and the Home for Incurables, Leamington; and £200 to the Shropshire and North Wales Eye, Ear, and Throat Hospital.—By will the late Mr. John Dyer, of Richmond Villas, Swansea, left £4000 to the Swansea General and Eye Hospital for furthering the endowment of the Dyer Ward, but from which 7s. 6d. per week is to be paid to the matron for the purchasing of flowers, fruit, and sweets for the children; £1000 to the North Devon Infirmary, Barnstaple; £500 each to the Swansea Infirmary for the Blind, the Deaf and Dumb Institution, Swansea, and several other charitable institutions.—The St. Mary's Hospitals, Manchester, have received legacies of £460 from the executors of the late Mr. Thomas Groom Baker and £200 from those of the late Mr. Joseph Core. The Manchester Royal Infirmary also received a legacy of £600 from the late Mr. Baker, and other donations from several sources to the amount of £200 have been received. The "Golliwog days" in aid of the Ancoats Hospital on May 27th and 28th have resulted in a sum of £525 being paid over to the hospital.—The Chelsea Hospital for Women has received £25 from the Mercers' Company and £26 5s. from Sir S. B. Provis towards the building of its Nurses' Home. £16,000 have now been received, leaving £13,000 still to be collected.

MEDICO-LEGAL SOCIETY.—The following dates have been arranged for meetings of the society during the session 1921–22:—1921: Oct. 18th, Nov. 15th, Dec. 16th (annual dinner). 1922: Jan. 17th, Feb. 21st, March 21st, April 27th, May 30th, June 29th (annual general meeting). Members are desired to make a note of these dates.

UNIVERSITY OF PARIS.—A revisional vacation course on Recent Ideas concerning Diseases of the Digestive Tract will be given in the amphitheatres Trousseau and Bichat, Clinique Médicale de l'Hôtel-Dieu, from Sept. 12th to 23rd. The course will be under the direction of Prof. Maurice Villaret, and will comprise 30 lectures, divided into four main sections of Explorations, Symptoms, Diseases, and General Treatment. A certificate will be issued to students who complete the course, for which the fee is 150 frs.

VITAL STATISTICS IN FRANCE.—In France last year the excess of births over deaths was 159,790, as against 58,914 in 1913. For the first time since the war statistics have been available for the whole of the country, including the three departments of Alsace Lorraine. The births were 834,411 last year, compared with 790,355 in 1913, an increase of 44,056. The deaths were 674,621 against 731,441 in 1913, a decrease of 56,820. The number of marriages was almost doubled—623,869 last year against 312,036 in 1913.

TREATMENT OF SURGICAL TUBERCULOSIS IN BRISTOL.—For some time past the Bristol City Council, advised through its health committee by the medical officer of health and the tuberculosis officer, has had under discussion plans for the institutional treatment of surgical tuberculosis. There has been some difficulty in securing adequate premises, and in consequence of this difficulty it was at one time proposed that Bristol should as a temporary measure rent beds at Alton, while a more permanent home was being secured in or near Bristol. This plan has, however, been disapproved by the Ministry of Health under the pressure of the economy campaign, and although the Bristol Health Committee is anxious to proceed with the Alton proposal its fate is for the time being uncertain. At the time when it was first mooted this proposal was criticised on the ground that economy and efficiency can be reconciled only by a policy of concentration rather than one of diffusion. These critics are, through the medium of the Bristol Medical Committee, likely to secure a hearing before long, and it is possible that even if the Alton plan should fail other proposals may be forthcoming by which delay in the provision of the necessary premises may be obviated. The Bristol Council is proceeding with the more permanent part of its plan, the development of an estate of 70 acres on the outskirts of the city recently purchased in order to provide 100 beds for the treatment of "pre-tuberculous" children. In the meantime temporary premises leased to the Council by the Bristol Guardians are being used to their utmost capacity under the direction of the City Tuberculosis Officer, Dr. C. J. Campbell Faill, for the treatment of tuberculous lesions, pulmonary as well as surgical, in children, but these premises are grievously inadequate.

HOSPITAL FOR TUBERCULOUS CHILDREN, BELFAST.—The Belfast Corporation has opened a new hospital for tuberculous children at Graymount, a few miles from the city on the north side. The property includes a commodious mansion, formerly the residence of Major Kerr-Smiley, M.P., and 15 acres of land with well-laid out pleasure gardens. It overlooks Belfast Lough. There are ten large airy wards with accommodation for 50 patients, a number which will be increased as soon as circumstances permit. The institution is intended for the non-pulmonary forms of tuberculosis, especially for cases of bone and joint disease. Attached to the hospital is an operating theatre and a workshop for the manufacture of splints. There is also an open-air day school which is attended by contact cases—i.e., children from homes where cases of tuberculosis exist. These children spend the day at the hospital and are provided with two meals. They are taught the elements of housewifery, simple dress-making, knitting, &c. Miss Jolly is matron, and the attending surgeon is Mr. H. P. Malcolm.

The opening ceremony was performed on July 22nd by the Lady Mayoress of Belfast, and the principal speakers were Sir E. Coey Bigger, Chief Medical Inspector to the Irish Local Government Board, and Prof. Thomas Sinclair. The former mentioned in the course of his speech that one half the cost of maintaining the institution would come from the city rates and the remaining half from Government funds. He pointed out that there was a decided decline in the incidence of tuberculosis in Ireland. In the ten years ending 1910 the average number of deaths from tuberculosis was 11,627, while in 1920 the total deaths were only 7426, a reduction of 33 per cent. He urged more attention to the milk-supply with the view of stamping out the bovine type of tuberculosis. Prof. Sinclair expressed the opinion that better results were obtained in surgical tuberculosis by open air and hygienic measures than by operative procedure.

Wilfred W. E. Fletcher, M.B.Camb., D.P.H., who died on July 31st after an operation, was for 25 years a medical inspector of the Local Government Board and had lately acted as medical officer of health for the Metropolitan Borough of Hackney.

SPIRIT DUTY (VOLUNTARY HOSPITALS) GRANT.—The Ministry of Health and the Scottish Board of Health are prepared to receive applications from voluntary hospitals for grants in respect of payment of duty involved by the use of duty-paid spirit or drugs containing duty-paid spirit for medical and surgical purposes in these hospitals during the year 1920.

BETHLEM ROYAL HOSPITAL.—A course of lectures and practical instruction for the Diploma in Psychological Medicine of the Universities of London, Cambridge, Durham, &c., will begin at the Bethlem Hospital early in October next. Syllabus and further particulars may be obtained on application to the Physician Superintendent.

ABERDEEN SICK CHILDREN'S HOSPITAL.—A market fair in aid of this hospital was held on Saturday, July 30th, in the policies of Durris House, the seat of Mr. H. R. Baird. Over 20,000 people were present. Sir James Taggart, in opening the fair, said that Mr. Baird's aim was to raise £1000. The market was reminiscent of the old-time country fairs. In a large marquee in the centre of the meadow were neatly-laid-out stalls, heavily laden with china, fancy goods, flowers cut and in pots, cakes, fruit and vegetables, jumbles, pictures, furniture, rabbits, eggs, and the like. There were the usual attractive side-shows, including a fortune-teller and an aerial flight. Along with special donations the total amount realised was over £1000.

SUMMER COURSE IN HELIOTHERAPY AT LEYSIN.—The programme of the course already announced to be given by Dr. Rollier and his collaborators at Leysin, Switzerland from August 16th to 20th is as follows:—

Les bases scientifiques de l'héliothérapie. Etude physique et biologique de la lumière (Dr. Rosselet).—La pratique de l'héliothérapie des tuberculoses chirurgicales et ses résultats cliniques (Dr. Rollier).—Le diagnostic radiologique des tuberculoses ostéo-articulaires et le contrôle radiographique des résultats cliniques de l'héliothérapie (Dr. H. J. Schmid).—La cure de travail et l'avenir des convalescents de tuberculose chirurgicale. L'héliothérapie préventive (Dr. Rollier).—Les adjuvants de l'héliothérapie (radiothérapie, photothérapie artificielle, &c.). L'héliothérapie des affections non tuberculeuses.—Les appareils orthopédiques utilisés pour l'héliothérapie (Dr. Amstad).—Héliothérapie et peau (Dr. Leuba).—Visite des établissements héliothérapiques du Dr. Rollier et présentation de malades (Drs. Rollier, Amstad, Alexandrowski, Miéville et Giauque).—Visite et démonstration de "l'Ecole au soleil" (Dr. Rollier).

The course is gratuitous. Board and residence will be reserved for participants at 10 frs. a day, early application to be made to Secrétariat médical du Dr. Rollier, Les Frênes, Leysin-Village, Switzerland.

Dr. F. J. Waldo, City Coroner, held an inquiry on July 19th into the fire which broke out on the evening of July 8th at 52, Aldersgate-street, premises within the danger zone, in the possession and occupation of the Kolynos Incorporated, makers of dental cream. Dr. Waldo announced that he had received a number of letters from residents and occupiers in the immediate neighbourhood protesting against the storage of dangerous and combustible material in such a congested area. Mr. Norman L. Elliott, surveyor in the works department of the London County Council in charge of the means of escape section, said he had inspected the premises after the fire, and was not satisfied with the means of exit. He advocated arrangements being made between owners of adjoining premises for the erection of bridges from building to building. Mr. Paterson, H.M. Inspector of Factories, said that when he visited the premises in March, 1920, he thought the exits were reasonable. A warehouseman said to him the cause of the fire was a complete mystery unless it was a fuse. The electric light machinery was running at the time of the fire.

Giving particulars of the substances stored on the premises when the fire broke out, Mr. John Melvern, B.Sc., of Muswell Hill, chemist to the company, stated that there were 250 gallons of alcohol, 2½ tons of glycerine, between 50 and 100 lb. of thymol, a considerable quantity of eucalyptus oil, and three cases of peppermint oil. Superintendent Sells, of the Clerkenwell Fire Brigade, stated that the business carried on in the building caused a great risk to the neighbours, and Colonel Fox, of the Salvage Corps, described the exits as "most unsatisfactory, the roof access being a dangerous fire trap." At another inquiry recently held by Dr. Waldo on a fire at 33, Whitecross-street, the fact was elicited that people employed on the lower floors could not use the fire escape to the roof because the occupiers of the upper floors were not at work that day.

Obituary.

JAMES WALKER DOWNIE, M.B., C.M. GLASG., F.R.F.P.S. GLASG.

Mr. James Walker Downie, who died at Shandon on July 21st, was a native of Glasgow, and after being educated at the High School entered the University, where he graduated M.B., C.M. in 1881. After a period of study of diseases of the ear, nose, and throat in London he returned to Glasgow to take up junior appointments at the Royal and Western Infirmaries. He was soon appointed lecturer on diseases of the nose and throat at the Western Medical School and lecturer in the University, and later became surgeon to the Western Infirmary and to the Royal Hospital for Sick Children, to which at the time of his death he was consulting surgeon. He had been consulting laryngologist to the Ochil Hills Sanatorium and was for some time a member of the Medical Consultative Committee of Consumption Sanatoria of Scotland.

Mr. Downie became a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow three years after graduating: he examined for the Faculty in aural surgery and presented it with a handsome mace. He was an honorary president of the Glasgow University Medico-Chirurgical Society, ex-president of the Scottish Otological and Laryngological Society, and an ex-vice-president of the British Laryngological and Rhinological Association. He made frequent contributions to local societies and was the author of a clinical manual for the Study of Diseases of the Throat.

Appointments.

ABEL, A. LAWRENCE, M.S. Lond., F.R.C.S. Eng., has been appointed Honorary Surgeon to the Kensington and Fulham General Hospital.

NICORY, C., M.R.C.S., L.R.C.P. Lond., House Surgeon to Torbay Hospital.

PAVEY-SMITH, A. B., M.C., M.B., B.Ch. Camb., F.R.C.S. Eng., Surgeon for Nose, Throat and Ear to the Royal Bath Hospital and Rawson Convalescent Home, Harrogate.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. M.O. £500.
Barnsley, Beckett Hospital.—Jun. H.S. £200.
Bedford County Hospital.—H.S. £200. Asst. H.S. £150.
Birmingham General Hospital.—Res. Anæsthetist. Obst. H.S. H.S. Each £100. H.S.'s to Spec. Depts. £125. Res. Surg. Officer. £180.
Birmingham, Queens' Hospital.—Honorary Surgeon.
Bradford Royal Eye and Ear Hospital.—Hon. Asst. Ophth. Surg.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Bristol Royal Infirmary.—Cas. Ophth H.S.'s £120.
Carlisle Non-Provident Dispensary.—Res. M.O. £300.
City of Leeds.—Asst. M.O.H. £650.
City of London Maternity Hospital, City Road, E.C.—Res. M.O. £100.
Deptford Metropolitan Borough.—M.O.H. £800.
Devonport, Royal Albert Hospital.—H.S. £200.
East Suffolk County Education Committee.—Female Asst. Sch. M.O. £500.
French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C.—Anæsthetist. £25.
Glasgow, Bellahouston Ministry of Pensions Hospital, Cardonald.—M.O. £350.
Glasgow, District Mental Hospital, Garlloch, Garteosh.—Jun. Asst. M.O. £350.
Glasgow, Victoria Infirmary.—Visiting Surgeon.
Glasgow, Woodilee Mental Hospital, Lenzie.—Asst. M.O. £350.
Great Northern Central Hospital, Holloway, N.—Dental Surg.
Great Yarmouth Hospital.—H.S. £200.
Hull Royal Infirmary.—V.D. and Cas. O. £250. Asst. H.S. £150.
Kensington and Fulham General Hospital.—Hon. Phys. Res. M.O. £200. Non-Res. Surg. £100.
Kent County Council, Lenham Sanatorium.—Asst. M.O. £400.
Leeds, Hospital for Women and Children.—Two H.S.'s. £25.
Leeds Public Dispensary.—Sen. Res. M.O. £250.
Lincoln Education Committee.—Asst. Sch. M.O. £500.
Liverpool, Royal Southern Hospital.—Surg. Tutor and Registrar. £20. Second M.O. to V.D. Dept. £200. Two H.P.'s. Three H.S.'s. Each £100.

Loughborough and District General Hospital and Dispensary.—Res. H.S. £200.
Manchester, Ancoats Hospital.—H.S. £150.
Manchester Ear Hospital.—Anæsthetist. £15 15s.
Manchester Hospital for Consumption and Diseases of the Throat and Chest.—Res. M.O. £350.
Manitoba University.—Asst. Prof. of Anatomy. $3500. Prof. of Biochemistry. $4500. Asst. Prof. of Physiology. $3500.
Newcastle-upon-Tyne City Mental Hospital, Gosforth.—Jun. Asst. M.O. £400.
Nottingham City Asylum.—Med. Supt. £700.
Nottingham General Hospital.—H.P. £200.
Oxford, Radcliffe Infirmary and County Hospital.—Cas. H.S. £200.
Preston County Asylum, Whittingham.—Asst. M.O. £572 18s.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. O. £150.
Royal Waterloo Hospital for Children and Women, Waterloo Road, S.E.—H.P. £100.
St. Bartholomew's Hospital.—M.O. for Dept. of Psychological Medicine.
Seamen's Hospital Society, Greenwich, S.E.—H.P. H.S. Each £150.
Singapore Municipality.—Bacteriologist 9000 dollars.
Swansea County Borough.—Asst. M.O. £500. Dental Surg. £500.
Sydney University, New South Wales, Australia.—Chair of Psychiatry. £1100.
Tynemouth County Borough.—Clin. Tuberc. O. and Asst. M.O.H. £600.
Wakefield, Clayton Hospital.—H.S. £225.
West Derby Union.—Asst. Res. M.O. for Walton Institution, Rice-lane. £400.
Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.

Births, Marriages, and Deaths.

BIRTHS.

EARP.—On July 22nd, at Onex, Geneva, Switzerland, to Kathleen, (née Goodliffe) wife of J. Rosslyn Earp, M.A., M.R.C.S. —a daughter, who was named Evelyn Mary.
HARTIGAN.—On July 28th, at Wood Hatch, Farnborough, the wife of Colonel J. A. Hartigan, C.M.G., D.S.O., R.A.M.C., of a daughter.
JEPSON.—On July 24th, at a nursing home, the wife of W. Baly Jepson, M.C., M.R.C.S., St. Bartholomew's Hospital, of a daughter.
NORBURY.—On July 29th, at 25, Harley-street, the wife of Lionel E. C. Norbury, O.B.E., F.R.C.S., of a daughter.
WINFIELD.—On July 27th, wife of Dr. F. B. Winfield, of Harborne, Birmingham, of a daughter.

MARRIAGES.

BUTCHER—DYER BALL.—On Thursday, the 28th July, at Blackheath, Trevor A. Butcher, O.B.E., M.R.C.S., L.R.C.P., to Lucy, only daughter of the late James Dyer Ball, I.S.O., Hong-Kong, and Mrs. Ball, 55, Lewisham-hill, S.E.
HUDSON—BASTOW.—On June 19th, at St. Alban's Church, Burnaby, B.C., W. F. A. Hudson, M.A. (Cantab.), of Fosthall, Nakusp, B.C., to Irene Bastow, M.B., B.S. of 12, Cardiff-road, Luton, Beds.
NAPIER-CLAVERING—SPRIGGE.—On July 23rd, at Stoke Poges Church, by the Rev. Canon A. T. Barnett, Mark, elder son of Mr. and Mrs. Claude Napier-Clavering, of Harborne, Birmingham, to Elizabeth, elder daughter of Sir Squire and Lady Sprigge, of Stoke Green, Slough.

DEATHS.

ALLEN.—On July 23rd, 1921, at Riversdale, Belper, Richard G. Allen, M.R.C.S. Eng., L.R.C.P. Edin.
ATKINSON.—On July 25th, at Bexhill-on-Sea, Frederick Page Atkinson, M.D., formerly of Surbiton, aged 80.
LYON-SMITH.—On July 29th, at 35, Harley-street, W., Harry Lyon Lyon-Smith, M.D., of heart failure.
WILSON.—On the 19th July, at St. Martin's House, Jersey, suddenly, Fleet-Surgeon George Wilson, Royal Navy (Retired).

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

CRIPPLES HOSPITAL, HARTSHILL.—On July 21st Lady Stafford formally opened the nurses' wing at the Hospital of the North Staffs Cripples Aid Society, Layfields, Hartshill. The foundation stone of the new block was laid by Sir Joseph Cook, now acting Premier of Australia, some time ago, the building being then intended for an operating theatre, but the necessity for better accommodation for the nurses was so urgent that temporary arrangements were made for the theatre. Although the cost of the addition has been largely raised already, the hospital requires a greatly increased annual income. If sufficient funds were available the work could be greatly extended. The income for last year was about £9000, the annual expenditure about £12,000; 198 patients passed through the wards, an increase of 34 on the previous year; 895 new out-patients presented themselves for treatment, and the average attendance in the out-patient department was 5076 per month. An average of 164 visits per month was made to the homes of patients. Pensioners are paid for by the Government, and all voluntary income is spent upon the children.

Notes, Short Comments, and Answers to Correspondents.

PHANTASIES OF THE DYING.

SOME REMARKS ON THE MANAGEMENT OF DEATH.

BY J. NORMAN GLAISTER, M.B., B.S. LOND.,
CHIEF ASSISTANT, MEDICAL O.P.D., ROYAL FREE HOSPITAL.

IT is commonly assumed that the function of the physician is to restore the disordered health of his patient to a normal condition, but it is difficult precisely to define a normal condition. It is obvious that a physical condition normal for a man of 65 is not normal for a boy of 15; it is almost equally obvious that the normal condition for a man aged 150 is one of peaceful slumber in a churchyard. The suggestion here brought forward is that we should regard death as being, like birth, a natural process; by so doing we shall escape the futile struggle, well known to every general practitioner, against a death known to be both inevitable and desirable.

The method of dealing with a dying patient here described will not improbably be criticised on two grounds: (1) That there is nothing new about it—up to recent times it has been usual for the priest to attend to the mental comfort of the dying, and he can do so still where it is considered necessary; (2) that it is new and unnatural and an undesirable intrusion into the privacy of last moments. Such criticism would encourage me in the belief that the provision of mental comfort for the dying has been a preoccupation of the human mind from the earliest antiquity, and that present-day practice falls far short of what it might achieve in the fulfilment of the legitimate demands of a deep-rooted human instinct.

Mental State Associated with Inoperable Cancer.

For the sake of simplicity let us confine our attention to the typical case of a patient dying from inoperable cancer. Consider first the mental state usual in such a case. The illness of the patient is steadily progressing; his friends know that he is dying, but he is supposed not to know—or at least, not to know how advanced it is. He is perfectly sane, presumably capable of drawing inferences from his own observation of facts, and growing steadily worse; the efforts of those about him to dissuade him from taking his illness seriously are in marked contrast with their earlier attitude of urging him to seek thorough treatment. The atmosphere of unreality soon shuts him off completely from the world of common-sense and normal conversation; the word "cancer" is never mentioned, and the friends avoid any remarks which might encourage him to ask a direct question as to the verdict. Soon the outsider listening to a conversation between the patient and his friends will notice the most elaborate circumventions on both sides; each speaker is obviously preoccupied with "cancer," and draws attention to it negatively by his avoidances.

The patient's mind is therefore in a condition of continual conflict. He knows that he is dying of cancer, and this for him is very likely the most important fact in the world; it appears constantly in his dreams, but in the waking world there is not a living soul with whom he can discuss it. He tries to exclude it completely from his conscious and rational thinking. His conventional life and his intercourse with other people are based upon the supposition that he may soon get well; his inner life is based upon the exactly opposite supposition. Again, as in every case of extreme illness, the instinct to accept death is steadily growing stronger; but all his intercourse with others tends to accentuate the instinct of self-preservation natural to the healthy, which his friends persistently force upon him. The one thing which he craves—human companionship up to death as in normal life—is denied him. As the end approaches, the effort of those around him to encourage him becomes such a mockery that it is abandoned; but there is nothing to put in its place. There is no objective which the patient can now pursue in common with those around him, and he sinks into lonely phantasy. The rôle of the doctor is to treat symptoms, to prolong life as far as possible, and to relieve physical pain by morphine or otherwise. For all human purposes the patient is thus thrust out from the company of living minds and buried away from contact with his kind weeks or even months before his death.

The method here advocated aims at providing human companionship for the patient up to the last moment of consciousness, it relieves fear by showing a desire to share his dreams and phantasies, and to accompany him as far

as possible on his road. A short description of an individual case will probably afford the best illustration.

Example of a Complaining Patient.

Miss A. was an unattractive woman past middle age, with a large fibrotic goitre and an inoperable recurrence of carcinoma of the breast. When seen at the end of November, 1920, the left breast was solid with growth, there was some ulceration of the new growth at the site of the operation on the right breast, and many nodules of growth were scattered over the right chest wall. She was very depressed, and full of complaints about her nurses, her food, and the cheerlessness and discomfort of her room. She was not confined to bed, but appeared to spend the whole of her time sitting by the fire and thinking. She found difficulty in concentrating her attention upon a book, she had hardly any visitors, and there were no relatives or friends who would find house-room for her. She was thus thrown back almost entirely upon her own resources. These included an affectionate regard for a niece in a convent school in France, and a sense of gratitude towards a distant relative who was providing for her maintenance in a nursing home; beyond these she seemed to have no interests outside shopping, life in a comfortable boarding house, and travelling about London. She displayed little emotion in talking about her own illness, except when expressing her sense of grievance against the doctor (since dead) who had first diagnosed the case, because he had not concealed his diagnosis from her.

She was asked to face the facts (admittedly known to her) that she had cancer, that most people with cancer die, and that it was probable that she would do as others had done. At the second visit she refused to see me, but I was informed that she was much more cheerful and stronger and had been out visiting friends. (Her internal conflict had become external—if she could only avoid this brutally truthful doctor she could feel as if she were getting well.) During the following three weeks I saw her seven times and we became good friends, though she continued to cherish grievances against her nurses. Her strength increased at first, but later diminished, and by the New Year was was finding difficulty in getting up. Her dislike of the matron and of her special nurse was now intense, and during the first week in January she began to have definite delusions of persecution and disturbing dreams.

Growth of Phantasy.

She was now entirely unable to leave her bed, and began rapidly to lose touch with the world of external fact. The cheery conventionalities of the nurse and of her few visitors were now thoroughly unreal to her, and the life of her dreams and phantasies became for her the real life, disturbed by occasional shadowy perceptions of taking nourishment, having her bed made, or receiving a visitor. She was evidently worried and unhappy, and she had a moderate amount of physical pain. Without external help it seems probable that at this point she would have withdrawn completely from contact with external affairs; she would have spent her remaining strength in a lonely struggle against insuperable difficulties in the land of phantasy. But with the help of a pre-established personal understanding and a readiness to talk in the language of her own phantasy, I was able to accompany her and to help her to overcome her difficulties. She recounted to me her dreams; many or most of them were half-waking dreams, more properly described as phantasies.

Three dreams recurred frequently in various guises: (1) Of lying at night in a sanctuary; (2) Of struggling to get somewhere; (3) Of people with a motor plotting against her. The patient evidently derived great comfort from recounting these dreams to a sympathetic listener, but she often had difficulty in talking, and would not take the trouble to give associations. It was therefore necessary to guess at the interpretation, and to wait for confirmation in subsequent dreams before making use of any information so gained. Also, since the interpretation of the dream was left for the time being in the region of the unconscious, it was necessary when one did make use of it to speak in the language of the unconscious.

Thus, when she first dreamed that people with a motor were plotting against her by the road-side, it seemed probable that the dream had reference to arrangements for her own funeral. This interpretation became more probable when she dreamed on the following night that the people in the nursing home were plotting to take her away in "a motor or something." She recounted this first as a dream, then as a statement of fact. I told her that I had sent for her niece, who was coming to take care of her. She replied: "It will be no use. I shall be taken away before she comes." I promised to keep in close touch with everything that went on at the home, and assured her that she certainly would not be taken away before my visit to her on the following day. This veiled statement that she would live for at least 24 hours completely relieved her anxiety, and I left her sleeping comfortably. The mention of the word "death" might have excited the alarm conventionally proper to such an occasion.

On the following day she reported a night full of dreams of frantic struggles to get somewhere, so as not to be lost. They all ended in the nurse flinging her roughly on the bed. She was persuaded to see that the nurse was only doing her duty in looking after her. On the following day she had still been struggling all night to get somewhere and still always finishing with the nurse, but now as a rescuing angel and not as a pursuing demon. On the evening of the same day she took a great liking to the nurse and made friends with her old enemy the matron. At the same time she became contented and pleased with all her surroundings and with herself. She had been a very difficult patient and had worn out the patience of those around her, and this sudden change of front on her part no doubt gained for her a considerable increase of comfort and attention.

A Dream of "Home."

The next day she continued her policy of reconciliation; she sent for a priest and was received into the Roman Catholic Church. On the same night she had a dream which linked together most of her previous dreams and was probably for her the solution of her life problem. It was as follows: "I was in a place with high, thick, moss-covered walls, with pretty little white lights scattered about in the walls. In one part there were beautiful strings of beads hanging down over the stone. We all lay or sprawled upon the floor until midnight in night-dresses or chemises. The place was beautiful, but its effect was rather weird and frightening. Then I think I must have been in a boat in this place, because there was water underneath. I went out in a boat or on a bed and was struggling up a hill to make money. (On inquiry, she was sure it was a great struggle, though she was not herself rowing or doing anything.) I went on and came down the other side of the hill, but finished at the same place as I had started from, which had now become this room, and I called it home." She dreamed this dream several times with slight variations, but always finished at home, and was always "so glad to get there." When the niece arrived she gave an account of a watchnight service to which she had taken her aunt a year or two previously, and which had evidently supplied much of the imagery of this dream.

For several reasons it seemed probable that the place from which the patient started in this dream was at once her mother's womb, Mother Earth, and Mother Church. She set out from it on the voyage of her life, which was always an uphill struggle to obtain creature comforts, yet a struggle which demanded effort from others rather than from herself. She had followed her course right up the hill and down the other side, but was now surrendering her life to the common stock of human life whence it had come, to Mother Church whence it had come, to Mother Earth whence it had come, and was very glad to get home again.

Cessation of Mental Conflict.

The niece recognised this as a correct summary of her aunt's life-history. With the help of the knowledge of the patient's attitude of mind derived from this dream, it was comparatively easy to keep in touch with her mentality during the remaining days of her life. The niece was instructed to abandon all reticences and to talk quite freely in her aunt's presence, assuming that she knew of her approaching death and welcomed it. Her death had appeared to be imminent, but after this solution of her conflicts there was a very definite return of physical strength, and on the first day of the remaining week of her life her voice, from an almost inaudible whisper, became strong enough to carry across the room. She then grew steadily weaker until her death. She slept peacefully at nights, and during the days was perfectly conscious and seemed quite happy. She said that her sleep was natural; she thought she had pleasant dreams, but could not remember them. During the last three days she could only make herself heard with great difficulty, but she intimated that she liked best to hear her niece and a friend talking to each other about everyday affairs in the room, and on the last day she expressed herself as quite ready to die. She was fully conscious half an hour before her death, and died—apparently without any discomfort—in her sleep.

Physical pain was never a very prominent feature in this case, but there was considerable and increasing pain during December, and a little T. opii was given; after the solution of the mental conflicts, however, the pain ceased entirely, and no sedatives were required. During the last fortnight the patient appeared to have entirely forgotten the existence of her growth, and no mention was made of it or of any pain. There is no doubt that the last week of this patient's life was quite exceptionally pleasant and satisfactory both to herself and to those around her, and it

seems not unreasonable to attribute the fact to the special attention devoted to the solution of her mental difficulties.

Necessity for Plain Speaking.

An immense amount of skilled effort is directed towards the extirpation of malignant disease, to the great advantage of those patients who are cured as a result; but unhappily most of those attacked remain uncured, and to these we seem to be able to offer comparatively little that is of value to them. Has not the time arrived for a broad re-survey of the whole treatment of the inoperable cancer case? Operative procedures of great value for the prolongation of life and the relief of discomfort have of late been described, but in very many cases the patient cannot be given the benefit of such treatment because it is considered necessary to maintain the fiction that there is no question of cancer, or alternatively that the growth has been permanently disposed of by a previous operation. When cancer has been diagnosed the facts in their least painful guise ought to be laid before the patient, and this may be a mental operation of considerable difficulty. The patient and his medical attendant can then discuss adequately their plans for extirpating the disease, or failing that for making the best possible use of the remainder of life, with all the help that the surgeon, the radiologist, and the psychologist can give them.

"PETROMORTIS."

POISONING by the exhaust gas of motor engines has already been the subject of comment in these columns (see THE LANCET, 1920, i., 1334). In the House of Lords the Marquis of Aberdeen commented recently upon the emission of noxious vapours from motor vehicles, suggesting the need of amending the Light Locomotive Acts so as to bring the matter under the control of the police authorities generally, when it was pointed out by the Duke of Sutherland (replying for the Minister of Transport) that the County Council could make regulations for the parks under their control similar to those which ruled in the great London parks, and that the police and London County Council possessed powers under the Locomotives on Highways Act to take proceedings against owners of motor vehicles that emitted smoke.

The London County Council have on various occasions exercised these powers. The visible emission of smoke from motor vehicles is certainly a cause of discomfort to other users of the road and sometimes interferes with vision, and constitutes a nuisance and a risk which should be stopped. The offence is due either to excessive lubrication or to an imperfect explosive mixture, the result of using a low-grade petrol or benzol without the sufficient addition of air. Whenever an explosion in a petrol engine is of moderate intensity and the combustion is incomplete, the exhaust gases will contain an increased percentage of carbon monoxide, which may rise to 15 or 20 per cent., while the percentage of carbon dioxide will correspondingly be lower.[1] According to Haldane 0·05 per cent. of carbon monoxide in air may produce symptoms of poisoning, 0·1 per cent. will cause headache and palpitation, while 0·2 per cent. is absolutely dangerous. Carbon monoxide is invisible and merely detectable by the symptoms it produces if inhaled. It is lighter than air, and so when emitted from a moving car will ascend and quickly become diluted. It is only when through a leak in the exhaust pipe that it escapes into a closed car, or where engines are run in imperfectly ventilated garages or, as during the war, in dugouts, that serious results have ensued.

Lieut.-Colonel Dale Logan, D.S.O., R.A.M.C. (retired),[2] Dr. R. P. Albaugh,[3] and A. C. Foote[4] have published accounts of serious results that have thus been caused. Automobilists using closed cars who develop headache after long runs would do well to eliminate this possibility. In America there have been a large number of deaths in small garages, with windows and doors closed, when engines have been run for testing purposes. There the term "petromortis" has been used by the press as to the cause of death in cases of this kind.

THE WEST RIDING MEDICAL CHARITABLE SOCIETY.

THE 93rd annual meeting of this Society was held at Sheffield on July 28th under the presidency of Prof. Arthur J. Hall. Reference has been made in former years to the valuable work carried on by this Society. Founded in July, 1828, at a meeting held in Leeds, it has gone on steadily increasing its sphere of usefulness. The Society now numbers 826, last year's increase of 63 being the largest in any one year. Those desirous of being admitted members of the Society must be in good health and not over 40 years of age. No application for a grant can be given except in respect of a member who has been an annual subscriber for at least five years. As is stated in the rules, the objects of the Society are as follows: "To help (*a*) any member who is disabled by illness, or accident, or age, and who has not adequate means of support; (*b*) the widow or children of a member dying in indigent circumstances; (*c*) the mother of such member, being a widow (or the sister, being single or a widow), who has acted as his housekeeper for a period of not less than five years immediately preceding his incapacity or death; (*d*) in the education of the children of members thus disabled."

The great majority of members join from altruistic motives and the Society deserves the support of every practitioner in the West Riding who is entitled to join. On the other hand, it is a wise and provident act for all young medical men and women to become members of this Society, for they know that if evil days fall upon themselves or upon those who are dear to them, and for whom they may not have been able to make provision, they will not be left without sympathy and help. The feature of the annual meeting is the careful consideration of the applications for help. The applicants are all known intimately by the stewards of the particular district in which they reside and full details of their circumstances are brought before the meeting. The grants are made for one year, each grant being subject to revision. Many of the grants have been running for long periods, one of them for 35 and one for 40 years. On this occasion 45 grants were made amounting to £1843. It was some years before the Society with its humble origin was able to make any grants at all, and it is a gratification to the members to know that the total sums granted now amount to £69,197.

ENGLISH–ESPERANTO DICTIONARY.

ESPERANTO was designed by a Polish ophthalmologist, Dr. Zamenhof, as an international link of communication. To-day medicine itself is becoming more and more recognised as a bond uniting the peoples of the world, and so it is natural that there should be many Esperantists among medical men. These will welcome a new and enlarged English–Esperanto dictionary,[1] containing some 30,000 entries. This number of words can, however, be considerably extended by the Esperanto student, as prefixes and suffixes play a very important part in the construction of the language. A feature of the dictionary is the printing in a separate line of every word having a distinct though allied meaning. For example, the word entertainment is repeated three times for the separate significations of hospitality, amusement, and soirée. Some new roots have been introduced which the authors offer for the acceptance of students, *tanko*, the armoured car introduced during the war, and *kamufli*, to camouflage, being examples; but not everyone will approve of the list of neologisms. *Pulo*, for instance, which is given for the name of the game played with billiard balls as well as for pool in the commercial sense, has long been in use by Esperantists for flea, and is indeed an international root, being derived from *pulex*. Although there is a fair proportion of technical words which the average educated man is expected to be acquainted with, there are not many medical terms, save those which are in more or less common use. There is a convenient list of proper names. Such a dictionary has long been wanted by Esperantists.

A MISSION HOSPITAL IN CHINA.

Prof. Harold Balme, dean of the School of Medicine, Shantung Christian University, brought the claims of preventive medicine in China before a large gathering of visitors to the British Medical Association gathering at Newcastle on July 22nd. We have before us the annual report for 1920 of the Roberts Memorial Hospital, Tsangchow (Province of Chihli), which contains a brief account of the extension of the main hospital work by the establishment of temporary branch hospitals, and gives some idea of the enormous amount of work undertaken by these outposts of Western medicine. Members of the hospital staff spent three weeks during the spring of the year under review in the city of Hsien Hsien, 50 miles distant from Tsangchow, and the capital of a county containing over 1000 villages and 320,000 people; and during those three weeks 2136 out-patients were attended to and 219 operations performed (112 of them under chloroform anæsthesia) in makeshift surroundings; two deaths only occurred—one of an out-patient, who drank "a week's supply of medicine at one go," and the other a Chinese

T. Watson: On the Thermal and Combustion Efficiency of a Four-cylinder Petrol Motor. London, 1910.
[2] Journal of State Medicine, October, 1920.
Gasoline Engine Exhaust Poisoning, American Journal of ublic Health, August, 1917.
[4] A Case of Gasoline Poisoning, United States Nav. Med. Bull., No. 10, 1916.

[1] English–Esperanto Dictionary. By F. Fulcher and B. Long, B.A. Camb. London: E. Marlborough and Co. 1921. Pp. 346, 7*s.* 6*d.*

hospital helper who contracted small-pox during his work. In the summer the hospital flew the Red Cross flag for two weeks in readiness to receive wounded from the fighting 50 miles to the southward, but the few casualties which occurred were sent to Tientsin. The famine spread through neighbouring districts in the autumn and the Mission undertook the distribution of grain under the auspices of the North China International Society for Famine Relief. An outbreak of pneumonic plague ten miles south of Tsangchow took place at the end of the year, at which time the earthquake, very serious elsewhere, was slightly felt in the neighbourhood.

A couple of pages of the report deal with the women's hospital. The difficulty occasioned by the suspicious attitude of many of the patients is partly overcome by the plan of allowing each patient one relative or friend to live in the hospital and wait on the patient. A great hindrance to medical work is the well-known ability of the Chinese to suffer uncomplainingly for long periods of time; many patients are only brought to hospital in a hopelessly advanced stage of disease. Tuberculosis and cancer are common, and all treatment is prejudiced by the absolute lack of sanitation in the homes of the poorer people. A lack of funds prevents the undertaking of more extensive work.

A MEDICO-EDUCATIONAL EXPERIMENT.

IN the medical report which has been issued on the Oak Bank Recovery Home opened at Prestwich in October, 1917, by the Invalid Children's Aid Association, for ailing children, Dr. A. A. Mumford, the medical adviser to the Home, gives an account of the work done and of the principles of treatment adopted.

Earlier experiments in 1913–14 had shown the importance of steady and definite out-door occupation in establishing a permanent recovery in ailing children, better results following a shorter and fully occupied stay in the country than a longer and unoccupied stay in a convalescent home. Dr. Mumford notes that the final test is to be found in the ultimate fitness of the child for citizenship, and points out that the measurement of respiratory capacity forms a reliable index to the standard of will-power as well as that of bodily health in a given individual. On this axiom is based the treatment for the ailing and delicate children admitted to Oak Bank Recovery Home. Careful notes are taken of the range of breathing of all the children, most of whom on admission possess barely the minimum of respiratory capacity to suffice for a sedentary life, and although they are not encouraged to put forth exaggerated respiratory efforts, nor is any formal training given to this end, yet, after a sufficiently prolonged stay the range of breathing is found to be greatly increased. The benefits resulting from the acquirement of adequate respiratory capacity are claimed by Dr. Mumford to be far more permanent than are those derived from the usual forms of Swedish drill. Tables are appended to the report, suggesting that the longer the stay of the child the better the results as gauged by the breathing tests, the nature of the tests applied, however, not being specified.

Dr. Mumford correlates with these observations similar observations made upon children at the Greengate Dispensary, Salford. These children, who are suffering from actual deformity of the chest, associated with a severe degree of rickets, receive the same treatment as do the Oak Bank Home inmates, without the advantage of country air; and after three or four years of treatment they are usually discharged, not only completely cured but above the average in general health. Dr. Mumford concludes by the remark that improvement in class work is constantly associated with increased range in breathing.

WORTHING WATER-SUPPLY.

THE Worthing Corporation is wise in the step it has just embarked upon in preparing for the increased demands that must inevitably be made upon it in the near future as regards that all-important commodity, water. Worthing grew in population more than any other urban district in West Sussex in the decade 1901–1911; the figures of the population were 22,567–30,308 respectively; and while the 1921 census figures are not yet available they must, as the result of changed circumstances since 1911, show a very large increase in population, inasmuch as a considerable extension has been made of the boundaries. The demands for water have consequently greatly increased. The works from which Worthing obtains its present supply are situated at Broadwater, at the foot of the South Downs, and were constructed a quarter of a century ago. At that time the Local Government Board stipulated for a daily yield of 1,000,000 gallons before sanctioning the loan to cover the cost. The supply proved ample and of excellent quality, but during the past ten years, consequent upon the increased population and the extended district, the average daily consumption has increased from about 900,000 gallons to 1,050,000 gallons, or at the rate of only about 15,000 gallons per day per annum. In a week of maximum use the average daily supply rises to about 1,300,000 gallons, an increase of about 25 per cent. This is approaching very closely to the maximum yield of the existing works, which at the end of a series of dry years may fall even as low as 1,300,000 gallons per day. Acting, therefore, on the advice of Mr. Kenneth P. Hawksley, consulting engineer of Westminster, the corporation has, without a word of opposition, voted in principle for a scheme to make ample provision for the future at a cost of £80,500. But this formidable sum is not to be raised at once, nor in the immediate future, but steps are to be taken forthwith for acquiring the land only and then piecemeal the construction of the works and the provision of the necessary machinery. In the first place, efforts are to be made to secure an additional flow of water from the excellent source already tapped at Broadwater; while the new site upon which the corporation has designs for an extension of their water-getting area is in the same vicinage as the existing works and known as the Long Furlong Valley. There is no doubt this will result in an abundant supply of water as excellent as that from the Broadwater site. The South Downs are noted for their excellent springs. A few miles eastward of Worthing the large towns of Brighton and Hove are supplied with water from similar sources. Worthing may be congratulated upon its foresight.

A. P.—We are informed that the site for the proposed Lister Memorial has not yet been decided upon.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, August 8th.—12 noon, Dr. S. Pinchin: Diseases of the Heart. 2 P.M., Dr. Morton: X ray Department. Mr. MacDonald: Surgical Out-patients. Mr. Gibb: Eye Department. 4.30 P.M., Lecture:—Dr. A. Saunders: Scurvy.

TUESDAY.—10 A.M., Mr. D. Buxton: Dental Department. Surgical Registrar: Demonstration of Cases (Surgical Wards). 11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Dr. Burrell: Medical Out-patients. 4.30 P.M., Lecture:—Dr. Pritchard: Acute Pyogenic Infections.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Mr. Addison: Operations. 4.30 P.M., Lecture:—Mr. Page: Anæsthesia.

THURSDAY.—11.30 A.M., Obstetrical Registrar: Gynæcological Demonstration. 2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. Simmonds: Orthopædic Department. 2.30 P.M., Dr. A. Saunders: Demonstration of Cases, Medical Wards. 4.30 P.M., Lecture:—Mr. MacDonald: Bladder Growths.

FRIDAY.—12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Mr. Simmonds: Surgical Out-patients. Dr. Pernet: Skin Department. 2.30 P.M., Dr. Pritchard: Visit to Medical Wards. 4.30 P.M., Lecture:—Mr. D. Buxton: Dental Emergencies in General Medical Practice.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. Dr. Burnford: Visit to Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient, Out-patient Clinics, and Operations.

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